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THE ECONOMIC LOCATION OF FIVE LEADING NEW ENGLAND INDUSTRIES

Submitted by:
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"Th[illegible] New Eng[illegible]

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INTRODUCTION.

Throughout the civilized world the nations are burdened with the many-headed monster of unrest. The concomitant evils that this fell spirit carries in its retinue are resident in the bourses of the world, where the sources of wealth purvey their commodities for the needs and industries of the human race.

Fundamentally Economic Law will eventually legislate its own way out of the appalling crisis that inordinate ambition, hypocrisy and avarice have brought to a head--to a peak, unprecedented quantitatively in the century and a half of American democracy.

Economic Law exacts and disciplines impartially. Witness the economic control of the financial and industrial destinies of the great forces of the great nations of the world in the scrolls of authentic world history!

We might compare the mysterious and final workings of Economic Law to the most mighty catastrophes that the Hellas of Pericles demanded. In these masterpieces of the great Greek tragedians, there must be the lesson of retribution. There can be no serious offense against law or norm without the consequent requital. Or, further, we might recall the "eye for an eye, tooth for a tooth" reprisal, "the jot and tittle" of the old Jewish law.

And so, Economic Law will brandish the beacon-flash from her chosen points of vantage. She will spark it onward from the natural industrial centers to illumine, advise,

moderate, encourage the groping nations of the world along the infallible paths of economic truth and justice.

A specific transition will take us to the pertinent and immediate consideration of American, especially New England, Economic Laws.

New England has undergone numerous changes recently, which appear to have shaken her loyal inhabitants. In order that we may see the causes of these changes, we must confine ourselves to a definite area of examination. The majority of comments on production and distribution now seem to pertain to the question of location.

In keeping with this particular aspect of the subject, it will be our purpose to confine our analysis to five leading industries: cotton goods, worsted goods, boots and shoes(other than rubber), electrical machinery, supplies and apparatus and rubber goods (other than boots and shoes) and rubber tires and tubes. We will make a comparison of these five leaders with competing districts, in order that we may see the advantages of each. Our particular interest will be concentrated in New England, so we must get particularly acquainted with this district. In order to do this, let us analyze; first, the land; second, the people; and third, the industries.

History depicts the pioneer era and informs us as to the operation of economic laws. Chronologically we can then trace the industrial advancement to the present time. Changes are prominently outstanding and the causes are found which will clarify our ideas. Readily, we will see that the reasons

that determined industrial locations in the past, are not the same as those determining present day locations.

When we are familiar with industrial New England, we are in a position to appreciate the advantages of location. Then, after contrasting our industries with those of our competitors, we may hope to sense the inclination of the balance of advantages.

DEFINITIONS.

"THE ECONOMIC LOCATION OF FIVE LEADING NEW ENGLAND INDUSTRIES".

Behold our thesis title! Let us look into the several terms of it.

'Economic': an investigating, scientific attribute that qualifies the production distribution, and consumption of wealth. Originally the term meant: the provisions of household law, hence community law, hence law affecting relations between two communities, hence trading law, originally primitive, now highly complex. At all times essentially the term predicated sound management.

'Location': a position, place, situation, residence, more pertinently: a topographical spot suitable to maintain a people in decent, satisfactory existence.

'Leading': principal, main, chief, supreme, vital, great, eminent. In our title: those five industries most valuable in estimates of product.

'Industries': the several branches of business wherein capital and labor are employed. We shall restrict the expression here to mean manufactures.

Now that we have defined the words used in the title, and have marked off the bounds within which the proposed investigation is to be made, here is the opportune time to decide on the methods that will be used in this survey.

The same standards, by which we will select the leading New England industries, will also be used in selecting the leading competitive districts. Then, standards for economic location will be established, which shall be based upon the

authoritative opinions of recognized industrialists. When we have applied these gauges of success, many advantages and weaknesses will come to light. Our standards must of necessity be flexible, since there is no means of evaluating the human element, which must enter into the consideration.

The purpose of this analysis is to show that location was an important cause of many recent industrial changes. Doubtless many difficulties will crop up in the course of our inquiry, but our investigation will be rewarded if, in our conclusion, we discern the beneficial and detrimental factors.

Finally, we will have so focused our economic eyes, that we can peer into New England and interpret the prevailing situation.

PRIMITIVE REQUIREMENTS OF AN ECONOMIC COMMUNITY.

Our sketch now shows that we have acquired an interest in a definite area called New England. Before drawing out our surveying instruments to evaluate this district, let us consider this territory as an economic community. By so doing, we will more fully appreciate New England people and industries.

Essentially, the economic principle of location is an offshoot of the principle of a successful economic organization. Economic organization is successful, in that it provides the best possible conditions for the greatest number of people. The best possible conditions depend upon food, clothing and shelter. The chief sources of food are plants and animals. These can be obtained only by production or purchase. If they are produced, then an effort must be made to find the required conditions under which this can be done. First, the land must be cleared and the proper soil selected. Next the climate, including temperature, moisture, wind, and sunshine must be obtained. This is the best condition under which plants can be produced. There is an ideal temperature for each plant, so that this limitation may burden any locality with the production of one type of food stuff.1) For instance, corn production requires: 140 days without frost; showers while ripening; and, thereafter, dry weather. If there is less than four inches of rain, the yield is reduced. In the production of animals, similar limitations are present;

1) Professor L. D. O'Neil Boston University.

the most important of these being; scarcity of food, disease, and a climate that affects the animals adversely. Truly the difficulties involved in food production are indeed many and complex.

Again, this economic community has a difficult task to solve its clothing and shelter problem Specific requirements and limitations again present themselves, so that the struggle for existence becomes more complicated.

If these primitive necessities cannot be successfully produced, they must be bought. But to buy, requires some sort of an exchange of values, namely, barter. The difficulties of barter are evident, because of the innumerable wants and the limited production of a particular commodity. No doubt, each community produced that commodity which could be developed under indigenous conditions. Industries soon sprang up for this specialized production. Commerce next came into being, possibly as an offshoot of barter. Finally with commerce came transportation and the picture of the background of an economic community is complete.

EARLY HISTORY OF NEW ENGLAND.

Today, as we travel throughout industrial New England, we are amazed at the diversity of the industries, the sight of mammoth buildings, and the wealth represented in manufacture. All this is an effect of some cause. Indirectly, people are an important cause in this result, because it is they who have worked either mentally or physically to bring about such evidences of success. For this reason, let us try and understand the traits and characteristics of the early settlers, so that we may follow their influence on present day industry.

Turning over the pages of history, our attention is drawn to the "Protestant Reformation" in the sixteenth century. The "Reformation" is a highly important historical event, for its effects contributed to the establishment of New England. During the reign of Henry VIII, all monasteries were confiscated and the land distributed among the king's favorites. These thousands living on the land were driven off and consequently forced into beggary. General unrest prevailed throughout England at this time due to religious wars.1

The results of the "Reformation" became more apparent under the reign of Queen Elizabeth, when Puritanism was established. Freedom of worship was the principle upon which this body of men withdrew from the "Established" Church of England. In 1604, severe judgments including banishment

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1. Industrial History of United States.--Louis Ray Wells, Page 3

were imposed upon these deserters. This same Puritan independence and determination asserted itself later in the denial of the "divine right of kings". Such a stand so infuriated the rulers and disturbed the kingdom, that immigration was the only course open whereby these serious people could exist.

The first immigrants to land at Plymouth were a heterogeneous collection of individuals. To picture this colony as a select congregation would be exaggeration. If we consider the reasons for immigration, as these individuals must have done, there is no doubt that our conclusion will maintain, that the first New England society included the ambitious, the dissatisfied, the oppressed and the fugitive.

Louis K. Mathews 1 offers the following as causes for New England immigration: first, religious intolerance under the Stuart Rule in England; second, the economic difficulties in England brought about by gold, silver and furs. These three commodities were so associated with the New World, that they influenced the decision of many immigrants. Third, the New World was ladened with unappropriated land. At that time, in old England, land was considered as a source of wealth and its possession gave social standing. The fourth cause includes wanderlust and restlessness.

The pioneer immediately faced difficulties upon moving into his new home; as his opponents, namely, soil, climate and the Indian, harassed him. It is a historical miracle how so many settlers managed to survive during the first

1 The Expansion of New England --Louis K. Mathews **Pages 2-4**

winter on the New England coast. This fighting pioneer was not disheartened by such a disappointment, but on and onward did he push into more lucrative fields. He was energetic, intellectual, inventive and thrifty. In 1629, large numbers emigrated to Salem and Lynn for there was wealth attached to the trading in these towns. Perseverance was ingrained into the Puritan by all the rebuffs and defeats he received in his struggle for success.

When conditions were ripe for peace and tranquility, the "Indian Wars" broke out in 1637. Whatever economic advances had been made up to this time were nullified, when the Indian destroyed every monument of success which the immigrant had built. Although depressed, these people redoubled their efforts for progress when the smoldering campfires had died out. No barrier stood out so strongly against these progressive warriors, that they could not beat it down. Barrier after barrier was pushed aside. This man had a purpose and everything must be defeated that offered any opposition.

Again the pioneers' faith was tested, in 1675, with the start of the "King Philip" wars. When the three years warfare was completed, one thousand lives had been lost, twelve of the ninety towns totally destroyed, and forty towns had been the scene of large fires.1 Poverty became common, as debts mounted to unheard of heights. When these settlers did not cry out an admission of defeat under such circumstances, they handed down a noble and priceless example to posterity.

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1 New England Old and New --Old Colony Trust Co. Page 28

Let us now historically glance at the support the Colonists were receiving from England. As soon as the Motherland saw that her children were succeeding, she became jealous and sought to derive whatever benefits she could for herself. In 1651, the Navigation Law was passed limiting the colonies with which trade could be carried on. Then the Stamp Act was such an attempt to extract import duties that the deep rooted determination of the Colonist arose to score another victory. The bond between Mother England and her children was still further weakened, when England made her demands on tea duties. The "Boston Massacre" is sufficient proof of the determination each had to conquer. That relations were being strained, is seen from the passage of the Boston "Port Act" and the Boston "Tea Party". All these conflicts were a challenge to Yankee confidence. Gradually, all these grievances strained all feelings of tolerance, until at last it could hold back the torrent no longer, and like a cannon shot in a peaceful village, the barrier had crumbled and whirled on to the battlefields of Lexington and Concord.

Now that we have seen something of the early settlers, our course must be straight ahead to the quality and character of the population of later days. Up to 1820, New England was populated by the Yankee and the Puritan. Our larger cities of today, can trace their origin to this date as the start of the mighty influx of immigration from Europe, principally, to American shores.

Before 1820, the royal families of Europe saw their fortunes slipping away from them due to war. This was the

era of Napoleonic conquest. Many middle class English and Germans embarked for New England with the hope of replenishing their lost treasures. At the same time, large numbers fled to our shores to avoid military service in Europe. The Irish next sought the refuge of emigration. Most of these were poor people, who came here in hopes of opportunities. They were of the unskilled class, and could obtain work only out of doors during the spring and summer. Since these came without any financial reserve, they had to endure severe hardships during the winter when there was no demand for their labor. Most Irish immigrants remained at the port of entry, because they lacked the necessities for pushing onward. Conditions became so acute that charitable societies were formed to prevent starvation. Thus the Celts were bound by a bond of privation to settle in seaport towns. In 1820, the immigration from the British Isles amounted to 128,000.

Ten years later the German and Swiss immigrants started with a contribution of 60,000. England and Ireland added 65,000 in 1832. At the same time, high wages attracted innumerable Canadians. The famine, of 1846 in Ireland, and the discovery of gold in California in 1849, swelled the total Irish and Canadians to immigration leadership.

"In 1850, the total foreign population was of the Nordic type of the versatile English speaking Irish stock which had performed a part in establishing British institutions, Scotch or Irish".1) The total population in 1852 was 6,029,000 of which 5,000,000 were English or Irish.

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1) The Conquest of New England by the Emigrant --D. C. Brewer. Page 99.

To proceed with the foreigner, brings us to a statement of 1855, which shows that there were 181,000 persons in New England born of parents of Irish origin; 20,000 born of parents of English origin and 21,000 born of parents of English and American origin. Counting the children of foreigners as natives, the approximate foreign percentage of Boston was sixty-one, Lowell fifty-four, Lawrence seventy-one, and Fall River sixty.

The period of the Civil War and its resultant panic stemmed the tide of immigration until 1880, and industry then drew out its magnet and attracted 457,000 foreigners to the United States. Two years later, 778,000 strangers landed in the New World and this quota was surpassed by 100,000 more arrivals in 1903. We are interested only in people, so that it is to our advantage to observe the nationalities, the date of entry and their number. Hence a statement of the immigration of nationalities. (I)

ITALIAN

1879	1882	1887	1900	1914
5,791	32,160	47,622	100,135	283,738

RUSSIAN

1879	1881	1887	1892	1902	1907
4,942	10,655	30,766	81,500	107,346	258,943

AUSTRIA-HUNGARY

1879	1880	1884	1900	1907
5,963	17,267	36,571	114,847	338,452

(I)
Figures in this section are taken from:
The Conquest of New England by the Emigrant--D. C. Brewer.

Pages 153-154

To locate the states into which these foreigners were pouring, the following table is used. (I)

FOREIGN BORN POPULATION 1890

	Mass.	R. I.	Conn.
Scandanavian	3.45 %	3.6 %	5.55 %
German	4.74	3.48	16.69
Slavs	1.77	.84	.07
Graeco-Latin	2.25	3.57	4.15

NEW ENGLAND 1890

	Native Born	Foreign Born
Massachusetts	83.6 %	16.4 %
Connecticut	89.7	10.3
Rhode Island	83.9	16.1
New Hampshire	95.6	4.4
Vermont	89.3	10.7
Maine	94.6	5.4

It is quite true, then, that before 1880 the foreign composition of New England's population was small. The start of the great industrial advance in 1880 attracted so many foreigners that it is a trying problem to follow their location.

Labor was extremely scarce about 1880 when the demand for New England goods far exceeded the supply of labor necessary to produce these goods. Machinery had become popular and the cost of manufactured goods had brought materials within reach of the majority of people.

(I)
The Conquest of New England - C. D. Brewer Page 188

Up to this time, the factories, because of their size, had been owned and managed by private capital. The increased demand for goods so complicated manufacture, that the owner was compelled to share his duties with understudies and thus invited incorporation. Money which had been devoted to the interest of small industries, now sought investment in the field of manufacture. Agriculture with its dubious returns, then became unattractive to the farmer and so the rural population moved into industrial centers. The foundation of the present day corporation was now formed and quietly the private owner becomes detached from the industry and with him goes the human element of work and the personal contact of employer and employee.

The setting is now complete for the picture of successful business as New England, prepared with machinery, markets, and finance, sets out to bargain for labor. The difficulty in procuring labor was a task which the employer could not solve himself, so once more business became farther removed from the employer. The employment agency then came to life as a means of supplying labor. Steamship agencies, quickly saw opportunities for profit in immigration and became interested in the labor problem. Many agencies opened foreign branches and so advertised the possibilities of success in the United States that many left good continental occupations to come here. The heartless methods used by these agencies would enrage the justice of any nation. Misrepresentation, chicanery or any scheme that would bring labor was justified by these organizations. These combed Europe and without hesitation gathered every available prospect about the good

ship " Success". The seriousness of this practice can be seen from some of their methods. Thousands of immigrants landed in New York, who had decided upon living in the West. However, it was a common procedure for agencies to put these strangers aboard trains and boats and ship them into New England industrial cities. The outcome of such misrepresentation and trickery is that today many foreigners rightly are dissatisfied in New England.

In 1899, there were seven hundred industrial centers in New England. Connecticut, Rhode Island and Massachusetts, comprising one-third of this area, had 15,989 out of 22,576 establishments.

The strength of the corporation in 1904 shows that although only 25 % of the industries were incorporated, they were producing 75 % of the production. The figures taken four years later increase the value of their production to 81 %.

The foreign born percentage of Massachusetts in 1890 was 16.4 %. Ten years later we can see just how important the foreigner became, from the following facts: (1)

Number of Cotton Workers	76,813
Number of Foreigners	72,843
Number of Native Parentage	3,970
Number of Wool Workers	26,939
Number of Foreigners	24,262
Number of Native Parentage	2,677

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1. The Conquest of New England by the Emigrant;
By D. C. Brewer
Page 216

Now that we have accompanied the New Englander from the pioneer through the industrial stage, we may conclude by examining recent reports.

The total population in 1929 was 7,400,000, of which 2,803,000 was stock, long resident in this country; the remaining 5,697,000 were foreigners. One-third of the former live in the country; two-thirds of the long resident stock live in Maine, Vermont and New Hampshire. Three-fourths of the foreigners are found in Massachusetts, Rhode Island and Connecticut. Taking three of the largest industrial cities namely: Boston, Providence and Worcester, we see that one-half of the total population is composed of four foreign stocks. Two-thirds of the total population of the next ten largest cities are foreigners also. The most important non-English speaking factors in New England in 1929 were as follows: (1)

French Canadian	620,000
Italians	494,000
Russians	470,000
Austrians	194,000
Germans	162,000
Swedes	138,000
Turks	45,000
Greeks	43,000
Hungarians	41,000
Finns	35,000

(1)
The Conquest of New England by the Emigrant D. C. Brewer
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At the dawn of Industrialism, the Yankee who fought so staunchly up to that time began to surrender. The foreigner had started without the necessary hardship of his predecessor and had become more powerful in every factor, and the largest constituent of our labor societies. Because these people are young and well fortified with offspring, we must conclude that they are here to stay and when labor is considered, sufficient weight must be given to this element if our economic equation is to balance.

Up to 1630, the smaller industries included brick making, sawmills, iron foundries, gristmills and glass works. The value of water power was seen at such an early period as 1631, when the first sawmill was operated by water power.

With the increase of commerce, due to colonial exports to England, ship building received the impetus that shifted this art into a recognized industry. Up to this time, the pioneer was a jack-of-all-trades, but now production demanded the particular interest of only those having the natural ability in this line of work. In 1642, carpenters arrived and found a lucrative field in home-building and ship construction.

In 1643, particular interest was aroused in the early settler by offering a bounty on textile work. It was at this time that the parents taught their children the various operations of textile work. One year later, a fulling mill was imported from England and twenty people trained in the mills of Yorkshire, England started a production that eventually led to the mighty textile industry.

In 1646, the boot and shoe trade organized the beginning of an industry with the formation of the Boot Maker's Union.

According to Dean Tucker of Gloucester, "the colonies, in 1775, labored under many difficulties among which were; the lack of raw materials, unfavorable climate, lack of skill and interest, limited capital and credit and removal from the sea coasts to the interior of the country".1) However Louis Ray Wells in his industrial history, adds two important retarding influences, namely; "foreign competition and prejudice in favor of imported goods".

Industry had now been driven from the home, and so we come upon industries as we know them today. In general, we have seen the physical character of the colonial industries so that we can now examine the five leaders more closely.

It is amazing, that such gigantic industries as leather and textiles evolved from such simple surroundings. The years have swiftly flown from their industrial adolescence to the introduction of the "machine age"; the jump in efficiency between hand and machine labor is astounding.

Textile history is replete with famous names and events. The Industrial Revolution in England, which preceded the American industrial revolution by about fifty years, was the birth place of the machine age. Prior to that time all work was done by hand. Most of the inventions of 1750 were not used until the start of the next century. James Watt contributed his steam engine to industry in 1769, although it was not accepted in factories until 1785.

1) Economic Progress of United States Page 149--by Walter W. Jennings.

Spinning and weaving, two important functions in the manufacture of textiles, were the first operations on which inventiveness concentrated. Spinning was so very slow that the production of six spinners was required to keep pace with one weaver. The first invention came in the weaving process in the form of Kay's drop box, which made the margin between spinning and weaving even greater. The Royal Society of England then injected interest into the industry by offering a prize to the person inventing a machine that would spin several threads at the same time. The prize was awarded to James Hargraves when, in 1764, he invented the spinning jenny that spun eight threads at the same time.

Five years later, Richard Arkwright contributed an addition that made factories and spinning by power possible. When material had been carded, he ran it through three successive but faster rollers, after which it was spun by flyers. Samuel Crompton, in 1779, observing that the roller machine was faster but that the spinning jenny produced a finer thread, combined both of these advantages and developed the mule spinner.

The margin between spinning and weaving now found weaving on the slow side, but Edmund Cartwright soon speeded up the weaving time by adding the power-loom, in 1784. This was run by water power. The problem now to be solved was more effective work with the cotton itself. The production could be funished, but then there was the shortage of raw material. In 1793, Eli Whitney sent his donation to industry in the form of the cotton gin, a machine that sep-

arated the cotton seeds from the boll.

Although the date of the Industrial Revolution is set at 1810 in the United States, the New Englander was advancing in textile perfection. As early as 1786, Alexander and Robert Barr constructed the first carding, roving and spinning machine in the United States at East Bridgewater, Massachusetts. In Beverly a company started to manufacture in 1787. The results were disastrous, due to imperfect work. It was admitted that the Arkwright method was best but importation was forbiddedn. However, in 1789, Samuel Slater, a twenty-one year old mechanic trained in a Derbyshire cotton mill, came to Providence and constructed the machinery of the Arkwright process from memory. His mill proved a success and resulted in mills springing up in Rhode Island.

INDUSTRIAL HISTORY.

In the preceding chapter, we discussed the history of the New Englander; now, we are accepting an invitation to visit New England industries historically. We will observe early industries in general, but particular emphasis will be placed on the five present day leaders. The thought which we must keep uppermost in our minds during this voyage is the power of location.

Here we are at Plymouth in 1620, and before we disembark, let it be realized that there are aboard spinners, weavers, agriculturalists, trained mechanics, and professional men.

The first determinant of location in the case of the early settlers was chance. Industries sprang into being the moment the pioneer set foot on New England's shore. Agriculture was among the first, because of the necessity of food. Clothing was needed to ward off the blasts of winter, so that the spinning industry got under way. Before long, fishing grew in importance due to the remunerative waters on the coast. The ship builder than started to work and with him the allied lines of ship building, namely: carpentry and iron working.

Shoes were required to supply an economic need and the pioneer was prepared to supply himself. Tanning sprung from these early beginnings, when it was discovered that better bark was obtainable here than in England. Boot making was a one man industry at the start; these men roamed the country making shoes out of the leather which each person supplied.

In the case of supplying clothes, each family performed all the steps of spinning and weaving. This industry like that of boots and shoes went through the three phases of industry, namely: the household, the domestic, and the factory phases. In the first phase, the product was completely made in one house. In the domestic stage different operations of the same product were done in different places, and finally, the factory stage refers to large production with all work being done under one roof.

The raw materials for the textile wool industry were supplied by raising their own sheep. The shoe industry had the hides and tan bark at home so that location was important. It is safe to say that all early industries were economically located because they had the market, the raw material and the transportation facilities.

After the "War of 1812", England realizing that the American market was fast slipping from its monopoly, dumped textile goods here at so low a price, that the majority of mills were driven out of business. The result of this procedure was, that the new mills that come into being, located at water powers.

In 1814, the power-loom was put into use and plant layout so arranged that every operation was performed under one roof unlike that in England. Sales effort was now focused on the South and West instead of the East. Thus, this combination could undersell her competitor.

Lowell was the first city along the Merrimac to enter the field of textile manufacture. This was in 1823. Within

ten years, Lawrence, Massachusetts; Nashua and Manchester, New Hampshire, were located along the same stream. During the same period, Fall River, Chicopee Falls, Fitchburg, Salem and Pittsfield, Massachusetts; Dover, New Hampshire and Saco, Maine as well as Rhode Island towns came into industrial importance because of water-power.

Finance, which is so necessary for any industry flowed into the textile field at an opportune moment. Previous to the War of 1812, the passage of the "Embargo" and "Non-Intercourse" Acts, reduced agricultural, commercial and shipping profits. But then, this war cut off the foreign manufacturer and left us without a competitor, so that the idle capital quickly stormed into the textile field.

Improvements continued in the period of 1830, and the ring spinner added more efficiency and less labor to the textile production. In 1838, William Crompton presented his "fancy" loom by means of which designs were woven into the cloth.

Finally, under a protective tariff, the industry has continued onward, adding modern machinery, labor-saving devices and efficiency.

Thus the story of cotton goods is told.

LEATHER.

The making of leather passed through the household and domestic stages into a specialized field early in the Colonial days. Tan bark was available in New England and those adept at tanning set to work on this supply of raw material in making harnesses, saddles, boots and shoes.

Boots and shoes were made by itinerant cobblers who wandered around the cities making shoes on order. This tradesman merely supplied skilled labor and tools; the finished leather was supplied by those needing the shoes. Boot and shoe production remained in the handicraft stage until 1850. Thomas Beard and Isack Rickman were the best known of the shoemakers, plying their trade in New England in 1629. In that year, tanneries were opened in Lynn. This supplied the local area and operating expenses were small since equipment, more labor-saving devices, and the raw material, namely hides and bark were nearby. The industry expanded, only to meet local demands, consequently, the only improvement in shoe style up to 1670 consisted in adding straps and buckles to ladies' shoes.

(1) In 1670, John Adam Dagyr arrived in Lynn and it is to him that Lynn's famous shoe is due. This young Welshman was familiar with the leather business and his interest and genius started Lynn on her leather prosperity. He imported shoes from England and then took these apart in order to detect all the features. Soon, he had a shoe on the market that combined all imported features, together with his touch of individuality. It is to his name that credit must be given for the introduction of style into shoes. The demand for shoes increased but the season was not at hand for shoe factories.

By 1850, the plant layout, namely, the stock room, the cutting room, packing and shipping departments and office were arranged, although the industry had not yet become acquainted with machinery. Many forerunners of machinery had

(1) The Great Industries of the United States, Page 1252

appeared early in this century when improvements were made in cutting, pointing and setting machines.

In 1832, Mr. Richardson of Boston introduced a system of diagrams for pattern cutting. A machine for drafting, cutting and blocking boots was patented in 1847.

The great stimulus to mass production was given this same year by Elias Howe, when he introduced the sewing machine. Eleven years later, the McKay machine, invented by Lyman R. Blake performed the operation of sewing the uppers to the sole. The Goodyear welting machine and lasting machines were added some years afterward. (1)

The chief centers of the boot and shoe industry are Lynn, Brockton, Haverhill, Boston, Massachusetts, and Manchester, New Hampshire. Both Lynn and Brockton have the advantage of an early start, while the chance arrival of Dagyr supplied the stimulus to the other shoe centers mentioned above.

ELECTRICAL MACHINERY, SUPPLIES AND APPARATUS.

In this age of electrical conveniences, we do not stop to think, that we are being served by the products of an infant industry. Such a classification as the electrical industry was unknown before the census of 1879, although the telegraph and dynamo appeared about twenty years previous to that date. During the next twenty years, the most influential factors that affected the industrial world came into the market: the electric light, the electric railway, the electric motor and the telephone. Hence, the nativity

(1) The Industrial History of the United States

Louis Ray Wells Page 372

of this industry is assumed at 1880. Its rapid development, organization and efficiency has been one of the most marvelous growths in the entire history of applied science.

Turning back the pages of electric history, we find New England as the cradle of this giant industry. In New Britain, Connecticut, Professor Thomson first started to manufacture arc machines in 1879. Houston, a name always associated with Thomson, entered the partnership the following year. The name of the organization was the American Electrical Company. Electrical apparatus was then added to the list of products.1

In 1881, there were a few active producers in the arc machine field, and the product of each was sold under the name of the inventor. The most notable of these were: The Edison System, The Weston System, The Brush System, and The Maxim System.

The invention of the incandescent lamp by Thomas A. Edison, in 1879, was the spark that enkindled the interest in the electrical industry. Those familiar with the industry at that time, however, expressed the gravest doubts of success for the lamp. But, financial interest was enthusiastic at its possibilities, and Edison's stock with a par value of $100 jumped to $500 and finally climbed to $5000. These increases were within a few years. The electrical business began a boom, and the industry could not produce a sufficiency to satisfy the demand.2

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1 E. W. Rice, Jr. -- Magazine of Business. September 1928.

2 Pioneering Along the Electrical Trail -- Magazine of Business. October 1928.

Lynn capitalists became so interested in this field that they purchased the Thomson-Houston Company, and moved it to Lynn, Massachusetts. This corporation now had the inventive genius of these two men, and Charles A. Coffin was to guide the destinies of their products. This was in 1887. The new organization bore the name: "General Electric" Company.

Dynamos, galvanometers, watt meters, ammeter, voltameters, switches and other measuring instruments, soon found a place on the manufacturers production list. Edison continued the production of his invention and soon many small plants were opened to supply the market.

Samuel Insull appears in the electric field as a manager associated with Edison. The Edison Machine Works, and the Edison Lamp Company were located in Lower Manhattan. This location was most economic because of the density of population. Previous to 1886, all the Edison interests were consolidated into the Edison General Electric Company. Shortly afterwards, a strike broke out and this corporation was removed to Schenectady New York, where it is today.

In 1888, Mr. Coffin, of General Electric Compnay of Lynn, became interested in electrical traction, and so the Van Depoele Electric Company of Chicago was purchased and removed to Lynn. The trolley car was the electrical contribution of Mr. Van Depeole.

Up to 1890 was the era of the small electric light plant. Then, Mr. Coffin set out to create a demand for the product. However, the patents of several companies

so overlapped and infringed on each others rights, that he decided to draw heavy finance into the company, and by so doing obtained the Excelsior Electric Company of Brooklyn, New York, the Schuyler Electric Company of Middletown, Connecticut, the Brush Electric Company, and the Bentley-Knight Electric Company of Cleveland, Ohio.

Finally, in 1892, the Thomson-Houston, and Edison interests merged, and General Electric added T-H-E, to the title General Electric; so that T stands for Thomson, H designates Houston, and E signifies Edison.1

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1 Industries of Massachusetts, Page 57--Associated Industries, Boston, Massachusetts.

RUBBER GOODS INDUSTRY

The history of rubber dates back to 1493. At that time, Columbus found the Indians smearing their feet with this gummy substance as a protection against bruises. The natives also rolled this material into a bouncing ball which they used to play "catch". In the early Colonial days, the Salem clipper ship brought back many rubber balls as ballast from South America. The first rubber products were discovered in 1730, when French astronomers making observations in South America found the natives using rubber bottles. When samples of these were brought back to Europe, scientists became attracted by the possibilities of such material. Joseph Priestly discovered that this gluey substance would erase pencil marks and so in 1770 the name of "rubber" came into use.

The Rubber Goods industry sprang into being in 1830, when Macintosh, a Scotch gentleman, discovered that "cloth impregnated with rubber was waterproof". *1. The public then became acquainted with the raincoat and even today Macintosh and raincoat are synonymous.

Difficulties started immediately with this first rubber product. In the winter, the cold caused the rubber in the coat to become as stiff as a board and in the summer the heat made the coat sticky.

The Roxbury India Rubber Company of Connecticut was among the earliest of pioneers in the field. In 1833, this company started to manufacture waterproof clothing and footwear. They had not improved on Macintosh's process and consequently the varying temperatures brought an early failure.

*1. Journal of Chemical Education. James Cooper Lawrence
August 1930--1788-1801

When this factory was closed, a gentleman named Hayward was appointed caretaker. Being of an inquisitive nature, Hayward began to dabble in the various rubber compounds of the company and found a process for making hard rubber that was affected neither by heat nor cold. Charles Goodyear of Connecticut was working along the same line at the time and purchased Hayward's patent rights. Goodyear, however, did not succeed in the process. In 1838 a rubber factory started operations in Woburn, Massachusetts, but failed due to the imperfection of its product.

"Vulcanizing" which is the forerunner of the present day industry, was accidentally discovered by Goodyear in 1839, although the process was not patented until more than forty years later.

New England was a natural location for this industry, for here were the homes of the inventors, the market was easily accessible and the boot and shoe industry absorbed the bulk of their manufacture.

The industry was drawn westward because of financial interest. At the time, there were many plants in Ohio which had met with failure. Goodyear probably located in this section because of free rent or the financial strength of the section.

The merger period of this industry came in 1892 when the United States Rubber Company absorbed most of the small rubber factories in the country. During the period, New England pushed out ahead to set the pace in rubber production. In 1897, the Boston Woven Hose and Rubber Company was started in Cambridge, Massachusetts. Although branded with failure

in its infancy, reorganization brought it back to life and today it is reputed to be one of the largest rubber manufacturers in the world.1)

Arthur Hudson Marks and George Oenslager contributed as much to the success of the rubber industry as any other men of all times. By their process (1905-1906) the difficulty encountered in using rubber from various trees and sections was overcome. These men standardized rubber, so that the same grade of rubber could always be produced from varying grades of raw material.

Today the industry flourishes in New England, having sixty-two manufacturers in Massachusetts, fifteen in Connecticut and seven in Rhode Island.2)

Having briefly reviewed the early history of New England people and industries, we will pass on with our subject after presenting some of the opinions which have been submitted, to explain the location of industries or their concentration in New England.

According to Whitbeck, in his Economic Geography, the concentration of industries in the Northeast is due to: first, water-power and coal supply; second, transportation facilities by land and sea; third, a convenient meeting ground of coal and iron; fourth, an abundant supply of capital, labor, and markets, and finally, the advantage of an early start.

Other opinions offered by historians to explain the location of these industries are as follows: one, the rough

1) The Story of Rubber. Boston Woven Hose and Rubber Co. Page 14.

2) Industrial Structure of New England. Page 443.

surface of the Northeast drove the people from agriculture to the manufacturing industry; two, water-power drew industries to the towns along the streams; three, early communication was impossible in the hilly part of the land, and consequently the inhabitants settled in the valley. This citation is offered the explain the location of Lowell, Lawrence, Haverhill, Nashua and Manchester, along the Merrimac Valley.

V. CLASSIFICATION OF NEW ENGLAND.

In order to keep the subject within reasonable bounds, a description of the climate, soil and topography of New England is taken from "The Industrial Structure of New England." (Domestic Series No. 28).

The climate of New England is characterized by frequent weather changes, long and cold winters, usually with considerable snowfall, comparatively short summers with occasional brief periods of high temperature, and usually very delightful fall weather. Periods of extreme heat last but a few days, and on the coast they are modifed by sea breezes. The average number of days with oppressive humidity or with dense fog on the coast is small.

Lacking the enervating heat and humidity of more southern regions, New England climate stimulates exertion, is conducive to health and vitality, and favorable to industrial enterprise. Although winters in the northern and interior portions are rigorous, they are not too severe for human comfort; in the southern sections they are moderate. The mean annual temperature in southern New England ranges between 47 degrees and 49 degrees F.; in most of the northern portions it ranges between 41 degrees to 42 degrees F., falling in the extreme north to 39 degrees.

The invigorating climate has played an important role in the industrial development of New England. Its general healthfulness fosters a sturdy, rugged population and its variability is a stimulus to human activity. Its temperate quality in the summer gives ideal living conditions. The heavy snowfalls and severe winter weather in the northern portions of New Eng-

land are factors to be considered, because of their retarding influence on traffic and communication. Winter weather, however, is not a serious hindrance to rail or highway traffic in the more densely populated sections of New England, and it does not hamper the activity of the ocean ports.

Because this region lacks the enervating hot periods of some of the other sections, labor is maintained at full productivity throughout the year. Time is seldom lost on account of hot weather. The bracing air of New England generates ambition among the industrial population, and promotes a sanguine attitude. The humidity of the coast regions is a distinct asset in certain industries, especially in the manufacture of textiles, where moist air prevents the generation of static electricity, and maintains the fibers in a pliable condition for spinning and weaving. In this respect, the New England coast has advantages similar to those of old England, where the textile industry has had its fullest development.

Climate is an important factor in New England's characteristic product--maple sugar and syrup. A favorable combination of climate and soil gives importance to cranberry culture, to the growing of blueberries, and to tobacco growing in the Connecticut River Valley. In the growing of low-temperature crops, also, such as potatoes in northern New England, and turnips in eastern Massachusetts, climate is a determining factor. It has given Maine 'sweet' corn a wide reputation for fine quality. The New England climate, and the air drainage in its valleys, favor the production of apples of high quality.

The growing season in the southern part of New England varies

from 150 to 170 days, and in the northern portion from 120 to 130 days. Along the coast the frost-free period is longer than in the interior. In the northern part of Maine the growing season is shortened considerably by late spring frosts and early frosts in the fall; the frost-free period averages about 105 days. In southern New England, the last killing frost of spring comes the latter part of April or early in May, and killing frosts in the fall occur from October 10 to October 20. In northern New England, the danger from spring frosts is extended two weeks later, and killing frosts in the fall come in the latter part of September.

New England is well watered throughout the year. The annual rain and snow fall in the three southern states ranges from 44 to 46 inches. It is somewhat less than this in Vermont and New Hampshire, where it ranges from 35 to 40 inches. In Maine, it ranges from 40 or less in the north up to 46 inches in other portions of the state.

Moderate showers and occasional thunderstorms provide most of the summer precipitation. Frequency of rainfall throughout the growing season generally assures good pasturage and the maturity of crops. Hailstorms are of rare occurrence, but they occasionally cause some damage to tobacco in the Connecticut Valley. In northern New England, rainfalls in the spring and fall, come mostly from storms that pass over the St. Lawrence Valley or up the Atlantic coast. These storms continue sometimes from 24 to 36 hours, with a moderate or heavy fall of rain.

In southern New England, precipitation is well distributed throughout the year, but in the north there is somewhat less

in winter and and spring than during the rest of the year. In the interior and northern portions, where most of the winter precipitation is in the form of snow, the accumulation often reaches a depth of several feet. In these sections, the ground is generally well covered from early November to March or early April. The annual snowfall varies from 30 to 40 inches along the southern sections to the coast region, to 70 along the coast of Maine, and even to 100 inches in the northern portions of New England. The atmosphere naturally has a greater moisture content along the coast than in the interior of New England. The average number of days with dense fog or oppressive humidity, however, is small. Foggy weather along the Maine coast is most common in the summer months, but there are few days of dense fog lasting for more than an hour, except in the extreme eastern part. At Eastport, where there is more foggy weather than in any other portion of the Maine coast, the average number of days of fog during the summer months is six days in May and September, 7 days in June, 12 days in July and 11 days in August.

CHARACTER OF SOILS.

In consequence of the glacial origin and of the rough and broken surface of New England, there is a great diversity in types of soil, as well as in the elevation of farm lands. With the exception of a few specialized regions, such as the Aroostook Valley in northeastern Maine, and the valley of the Connecticut River in Massachusetts and Connecticut, very little uniformity of soil types exists any where in the six states. Along the low coast line stretches a narrow belt of sand, which in Massachusetts reaches out into the sea to form Cape Cod, and the nearby islands of Nantucket and Martha's Vineyard. These are the only vestiges of a coastal plain in New England. Practically all the tillable soils are of ample depth, and are usually well drained, and not subject to washing. In the heavier types of soil, sufficient moisture is retained for growing crops even during rather long dry periods.

New England soils may be classified according to type, contour, and elevation into four distince groups. These are: first, the mountainous and hilly regions of the higher elevations: second, the upland valleys interspersed among the hill regions; third, the more level land of the lower elevations; and, finally, the lowland valleys and coast region.

Among the mountainous and hilly regions there is generally a thin soil, and such a prevalence of rock that tillage is not profitable under modern conditions. In early days much of this land, after clearing the primitive forests, was given over to cropping in small irregular fields, which yielded fairly good crops until the virgin fertility of the soil was exhausted.

The difficulty of working this type of soil, in competition with the richer land of the western farms, is the principal reason for the abandonment of agriculture on much of this broken land, and for its consequent reversion to forest. Much of it is better adapted to timber growing than to farming, but portions of it are profitably utilized for farm pasturage as a support to the dairy industry.

On the floors of the numerous upland valleys lying among the hilly regions, there is generally a rather light and fine type of soil which is easily worked, and which warms up quickly in the spring. These upland valleys range from small, narrow hollows among the hills and along the stream beds, to quite extensive tracts of fairly level land. Apple orchards thrive in these upland valleys, where the air drainage is good, and early specialty crops also grow well there.

The soils of lower elevations are in areas of smoother contour, and are better suited to agriculture. Under proper care they provide excellent pasturage. They are mostly loams, varying from a gravel or sandy texture to fine silt. In some sections, they are favorably affected by the presence of chemicals in the bedrock, such as phosphate material in Aroostook County of Maine, and lime in Vermont, western Massachusetts and Connecticut. Some of these soils are admirably adopted to the growth of the heavier vegetables such as potatoes, and of hay, grain, and forage crops. In all but the northern portion of New England corn matures well on these soils of the lower elevations.

The coastal region of southeastern Massachusetts and areas back of it are dotted with marshes and beds of peat, rich in

accumulated vegetable matter, which are especially suitable for cranberry growing. The moist atmosphere and even, cool temperature of the growing season in this district have combined to make it the principal cranberry producing area of the United States. The sandy soil at the base of Cape Cod is also particularly fitted for the growth of such crops as strawberries and asparagus.

TOPOGRAPHY.

A study of a contour map of New England, shows that the low-lying shore regions below an elevation of 100 feet are generally very narrow. These are limited to a narrow fringe along the shores of southern Maine, eastern Massachusetts, Rhode Island, Connecticut, and the valley of the Connecticut River. Included in these low areas is the sandy projection of eastern Massachusetts that forms Cape Cod, together with the adjacent islands of Nantucket and Martha's Vineyard. This narrow strip of low coast range in New England is quite in contrast to the wide coastal plain farther south, extending from New Jersey to Florida.

Back of the low coastal regions, the interior of New England rises to highlands ranging in elevation from 500 feet to mountainous ridges rising above 3000 feet in some places. Approximately one-half of New England exceeds 1000 feet in elevation. These higher regions include most of Massachusetts, west of the Connecticut River Valley, and a small portion of north central Massachusetts. They reach downward into northwestern Connecticut, and extend northward to include most of southern and central Vermont, as well as the western and northern portions of New Hampshire, and the northwestern section of Maine.

What may be termed the physical backbone of New England is the mountainous portion which stretches from the Canadian border in Maine to the White Mountains in New Hampshire, and the Green Mountains in Vermont, reaching thence to the Berkshires in Massachusetts and northern Connecticut. The northern and western portions are conspicuously rough and rocky, with out-

cropping ledges interspersed with numerous water courses and lakes. The southern and eastern portions form an upland, generally sloping east and south from the mountain areas of the Atlantic.

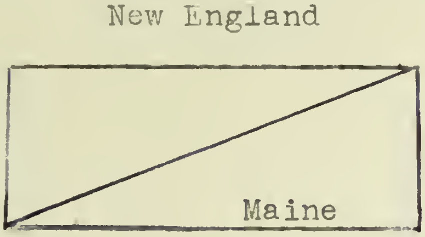
The ruggedness of its surface has been an important factor in the development of New England. The topography has made possible water-power, has influenced the routes of roads and railroads, and has limited the development of agriculture.

V. (d) PRODUCTS.

Before enumerating the various products of New England, let us measure this area and then compare it with other states, so that we may more fully see what, the term New England includes.

The maximum diagonal distance, from the tip of northern Maine to the southernmost point in Connecticut is only 475 miles; while the extreme width from east to west is about 320 miles. The geographic center of the region is located about forty miles west of Portland, Maine. From here to the northern tip of Maine, is farther from Portland to New York City. The center of industrial activity revolves about Framingham, 20 miles from Boston and the center of population is located at Ayer, Massachusetts, 30 miles from Boston. 1).

To visualize this area, a comparative chart of land is presented.



The dimensions and importance of New England are such contradictory notions, that detailed account of her production, and a specific statement of leading industries in one state will tend to correlate these two ideas.

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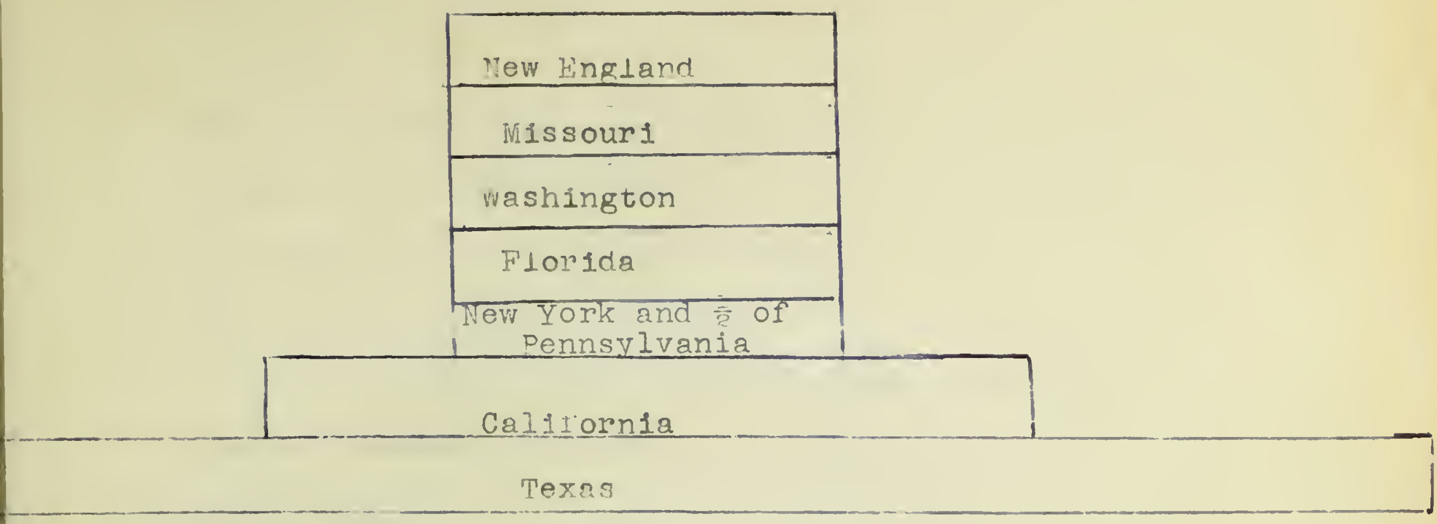
1) Industrial Structure of New England, page 5.

Land Surface



New England occupies only two percent of the land area of the United States. The total area of New England is so small that twelve individual states are larger than it.

Many and diversified products have spread the name of New England to all corners of the world. A list of such widely advertised products follows:

NEW ENGLAND INDUSTRIES

Jewelry

Silversmithing

Silverware

Electroplating

Engraving

Chasing

Die-sinking

Bread

Boots and Shoes

Printing

Publishing

Boot and Shoe findings

Copper work

Tin work

Sheet iron work

Canning, vegetables, and fruits

Preserving, vegetables, and fruits

Book binding

Blank-book making

Flavor extracts

Flavor syrups

Planing mill products

Ice Cream

Mattresses

Bed springs

Structural steel and iron work

Ornamental steel and iron work

Photo engraving

Millinery

Paint

Varnish

Rubber goods

Professional and scientific instruments

Motor vehicle bodies and parts

Marble, granite, slate, and other stone products

Macaroni, spaghetti and vermicelli

Awnings, tents, sails, and canvas covers

Plumbers supplies

Signs and advertising novelties

Blacking, stains and dressing

Shoe machinery

Clothing, Men's and Women's

Sugar refining

Foundry products

Machine shop products

Cutlery

Edge tools

Bakery products

Confectionery

Chocolate products

Cocoa products

Coffee and spice roasting

Coffee and spice grinding

Electrical machinery, apparatus, and supplies

Patent medicines

Perfumes

Druggist preparations

Meat packing (wholesale)

Furniture

House furnishings

Steam fitting; steam and hot water heating apparatus

Beverages

Musical instruments

Pianos

Organs

Paper boxes

Sausage and sausage castings

Knit goods

Non-ferrous metal alloys

Coke

Pig iron

Chemicals

Paving and roofing supplies

Cotton goods, dying and finishing

Silk goods

Rayon goods

Curtains

Fur-felt hats

Woolen goods

Worsted goods

Textile machinery

Saddles

Brass castings

Files

Bicycles

Sleds and carriages

Oil stoves

Fish

Canning and preserving of fish

Glue

Nets

Seines

Ship-building

Paper goods

Steam pumps

Cigars and cigarettes

Shirts

Hats and caps

Stereotyping and electrotyping

Concrete products

Hardware

Window shades and fixtures

Surgical appliances

Tanning materials and natural dye-stuffs

Trunks, suitcases, and bags

Umbrellas, parasols, and canes

Models and patterns

Screw-machine products

Statuary and art goods

Cleaning and polishing preparations

Glass staining, cutting and ornamenting

Pocketbooks, purses, and card cases

Hand stamps, stencils and brands

Mirror and picture frames

Window and door screens, and weather strips

Lasts and related parts

Rubber goods, other than boots and shoes

Boxes, wooden

Rubber tires and tubes

Sporting and athletic goods

Drop forgings

Cotton goods

Firearms

Petroleum refining

Gas manufacture

Sewing machines
Lace goods
Gas and electric light fixtures
Fertilizer
Leather, tanned, curried and finished
Canned beans and fruits
Grain-mill products
Soap
Lamps and stamped ware
Wirework
Hammocks and bedding
Radio receiving sets
Brass and bronze products
Cordage and twine
Shoe eyelets
Tire fabrics
Steel ship-building
Iron and steel rivets
Toys and games
Motorcycles
Carpets and rugs
Woolen goods
Matches
Machine tools
Oilcloth
Watches and clocks
Iron and steel bolts
Engines, turbines and water wheels

Combs and hairpins

Optical goods

Brushes

Buttons

Dairy products

Poultry and live stock

Apples

Peaches

Cranberries

Blueberries

Potatoes

Onions

Sweet corn

Dry beans

Maple sugar and syrup

Tobacco

Hard and soft woods

Pulp

Minerals

Fish: cod, haddock, lobster, mackerel, clams

Oysters

Typewriters and supplies

Lumber and timber products

Corsets and allied garments

Stoves

Stamped and enameled ware

Needles, pins, hooks and eyes, and snap fasteners

Envelopes

VI. NEW ENGLAND INHABITANTS AND INDUSTRIAL COMMUNITIES

We have sufficiently traced the New Englander through his various stages of progress, so that now we can appreciate his characteristics, and his influence on the industrial world. This is our introduction to the present inhabitants of our locality. It is now important to see just what are his present day standards in industry. We are anxious to classify this metropolitan population according to intelligence, standards of living and the peculiarities of its labor.

Education, paramount in the development of any community, finds a haven of welcome in New England. Hence, there were 1,459,125 pupils enrolled in the public, elementary and secondary schools in 1928. This represents an increase of 17% in eight years. 1).

Comparatively speaking, New England establishes standards of educational opportunities and expenditures. Her per capita investment for intellectual developments in 1928 was $18.38, while in the United States the annual expenditure was $18.21. The average length of public shcool training in the United States is less than seven years, while that of New England averages eight and one-half years. It is encouraging to note that 14% of the enrollment of all types of schools in the United States, was contributed by New England in 1928. This percentage embraces 307,956 pupils. Again, there were 307,956 pupils attending public high schools and 65,301 enrolled in private high schools and and academies. In the field of higher education, New England

1). The People of New England: New England Council 1931

colleges and universities contributed 70,132 pupils which is eight percent of the total enrollment in the United States. (1)

Standards of living are best seen from an examination of the wealth of a community, because this is the source from which the standards flow.

The National Industrial Conference Board estimated New England's wealth at twenty-eight billion, two hundred and eighty-nine million dollars or eight percent of the national total in 1929. The per capita wealth represented by this sum is $3488 as against $2921 for the United States.

Seeing that wages enable workers to supply and maintain standards, and insight into the income of New Englanders will disclose the reason for such high standards.

In 1929, our manufacturing plants paid the total of $1,352,545,517 to 1,098,293 employees, which represents $1231 as the average wage.

Thrift, a favorable omen in any economic community is deep rooted in our inhabitants.

Individual deposits in the banks and trust companies of our region in 1930, amounted to nearly six and one-half billions of dollars, or 12.8 percent of the total individual deposits of the United States.

New England's per capita individual deposits averaged $793, compared with the per capita individual deposits of $412 for the United States.

With 12.8 percent of the individual deposits of the country, New England has 14 percent of the savings depositors and 17 percent of the saving deposits.

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(1) The People of New England; (pamphlet) New England Council; 1931.

Total savings deposits in New England in 1930 amounted to four billion, eight hundred and thirty-two million dollars.

The commercial and savings banks of New England have aggregate resources of eight billions of dollars. This represents 11 percent of the combined resources of the commercial and savings of the country.

Again thrift is exemplified in the amount of life insurance in force. On Januaryl, 1931, ordinary life insurance, exclusive of group, in force in the New England states amounted to five billion, four hundred and five millions of dollars; or 7.9 percent of the insurance in force in the entire country.

In per capita life insurance sales, New England advanced more rapidly than the United States as a whole. In 1921, per capita sales amounted to $48.54 in New England and $47.31 in the United States. In 1930, New England's per capita sales had increased to $84.27 as against $75.58 for the United States. (1

(1 The People of New England: New England Council 1931

STANDARDS OF LIVING IN NEW ENGLAND

1.

Eleven out of every one hundred families pay Federal income taxes.

2.

Forty out of every one hundred families own their own homes.

3.

Fifty-one out of every one hundred families have telephones.

4.

Ninety out of every one hundred homes are wired for electricity.

5.

Ninety-three out of every one hundred persons have savings accounts.

6.

Ninety-six out of every one hundred children of school age are enrolled in public or private schools.

*The People of New England, (pamphlet) New England Council.

STANDARDS OF LIVING IN THE UNITED STATES

1.

Eight out of every one hundred families pay Federal income taxes.

2.

Forty-five out of every one hundred families own their own homes.

3.

Thirty-eight out of every one hundred homes have telephones.

4.

Sixty-seven out of every one hundred homes are wired for electricity.

5.

Forty-three out of every one hundred persons have savings accounts.

6.

Ninety out of every one hundred children of school age are enrolled in public or private schools.

The effect of population and industries upon trading centers is now presented in a statement of savings and other time deposits and depositors in all banks and trust companies in New England.

(In millions of dollars.)

	1927	1928	1929
Maine	298	313.1	315.9
New Hampshire	213.8	228.2	236.6
Vermont	193.2	206.5	211.1
Massachusetts	2439.6	2652.7	2710.8
Rhode Island	351.3	368.4	360.
Connecticut	795.6	862.6	885.9

Statistical Abstract of United States, pg. 274

NEW ENGLAND'S* POPULATION

	1930	1920	1910	1900	1890
Mass.	4,249,614	3,852,356	3,366,416	2,805,346	2,238,947
Conn.	1,606,903	1,380,631	1,114,756	908,420	746,258
Maine	797,423	768,014	742,371	694,466	661,086
R. I.	687,497	604,397	542,610	428,556	345,506
N. H.	465,293	443,083	430,572	411,588	376,580
Vt.	359,611	352,428	355,956	343,641	332,422

PERCENT OF INCREASE

	1930	1920	1910	1900	1890
Mass.	10.3	14.4	20.0	25.3	25.6
Conn.	16.4	23.9	22.7	21.7	19.8
Maine	3.8	3.5	6.9	5.0	1.9
R. I.	13.7	11.4	26.6	24.0	24.9
N. H.	5.0	2.9	4.6	9.3	8.5
Vt.	2.0	-1.	3.6	3.4	less than1

POPULATION PER SQUARE MILE

	1930	1920	1910	1900
Mass.	523.6	479.2	418.8	349.
Conn.	333.4	286.4	231.3	188.5
Maine	26.7	25.7	24.8	23.2
R. I.	644.3	566.4	508.5	401.6
N. H.	51.5	49.1	47.7	45.6
Vt.	39.4	38.6	39.	37.7

*Statistical Abstract of United States,page274

NEW ENGLAND'S INDUSTRIAL CENTERS

	1930	1920	1910	1900
Boston	781,188	748,060	670,585	560,892
Providence	252,981	237,595	224,326	175,597
Worcester	195,311	179,754	145,986	118,421
Hartford	164,072	138,036	98,915	79,850
New Haven	162,655	162,537	133,605	108,027
Springfield	149,900	129,614	88,926	62,059
Bridgeport	146,716	143,555	102,054	70,996
Fall River	115,274	120,485	119,295	104,863
Cambridge	113,643	109,694	104,839	91,886
New Bedford	112,597	121,217	96,652	62,442
Somerville	103,908	93,091	77,236	61,643
Lynn	102,320	99,148	89,336	68,513
Lowell	100,234	112,759	106,294	94,969

LARGE INDUSTRIAL CENTERS BY STATES

Massachusetts

Boston	781,188	748,060	670,585	560,892
Worcester	195,311	179,754	145,986	118,421
Springfield	149,900	129,614	88,926	62,059

Connecticut

Hartford	164,072	138,036	98,915	79,850
New Haven	162,655	162,537	133,605	108,027
Bridgeport	146,716	143,555	102,054	70,996

* Statistical Abstract of United States, page 274 .

RHODE ISLAND

Providence	252,981	237,595	224,326	175,597
Pawtucket	77,149	64,248	51,622	39,231
Woonsocket	49,376	43,496	38,125	28,204

MAINE

Portland	70,810	69,272	58,571	50,145
Lewiston	34,948	31,791	26,247	23,761
Bangor	28,749	25,978	24,803	21,850

New Hampshire

Manchester	76,834	78,384	70,063	56,987
Nashua	31,463	28,379	26,005	23,898
Concord	25,228	22,167	21,497	19,632

Vermont

No city having a population of 25,000

* Statistical Abstract of United States, page 274.

CHAPTER VII.

THE FIVE LEADING INDUSTRIES CLASSIFIED BY VALUE OF PRODUCTS.

NEW ENGLAND'S INDUSTRIAL LEADERS

(By value of products, in 1927)

I.

COTTON GOODS

Mass.	$284,706,007
R. I.	90,053,620
N. H.	57,721,546
Conn.	49,177,763
Maine	34,414,143
Vt.	3,145,790
	$519,218,869

II.

WORSTED GOODS

Mass.	$195,095,492
R. I.	118,310,113
Conn.	22,103,275
Maine	21,849,221
N. H.	--------
Vt.	--------
	$357,358,101

1927 Census of Manufactures.

Pages 266 and 434

III.

BOOTS AND SHOES OTHER THAN RUBBER

Mass.	$262,516,655
N. H.	24,853,099
Maine	36,663,037
	$324,032,791

IV.

ELECTRICAL MACHINERY SUPPLIES AND APPARATUS

Mass.	$139,348,725
Conn.	75,926,216
R. I.	13,354,654
N. H.	886,723
	$229,516,318

V.

RUBBER GOODS (OTHER THAN BOOTS AND SHOES) AND RUBBER TIRES AND TUBES

Mass.	$ 97,717,724
Conn.	33,590,803
R. I.	9,605,615
	$140,914,142

1927 Census of Manufactures.

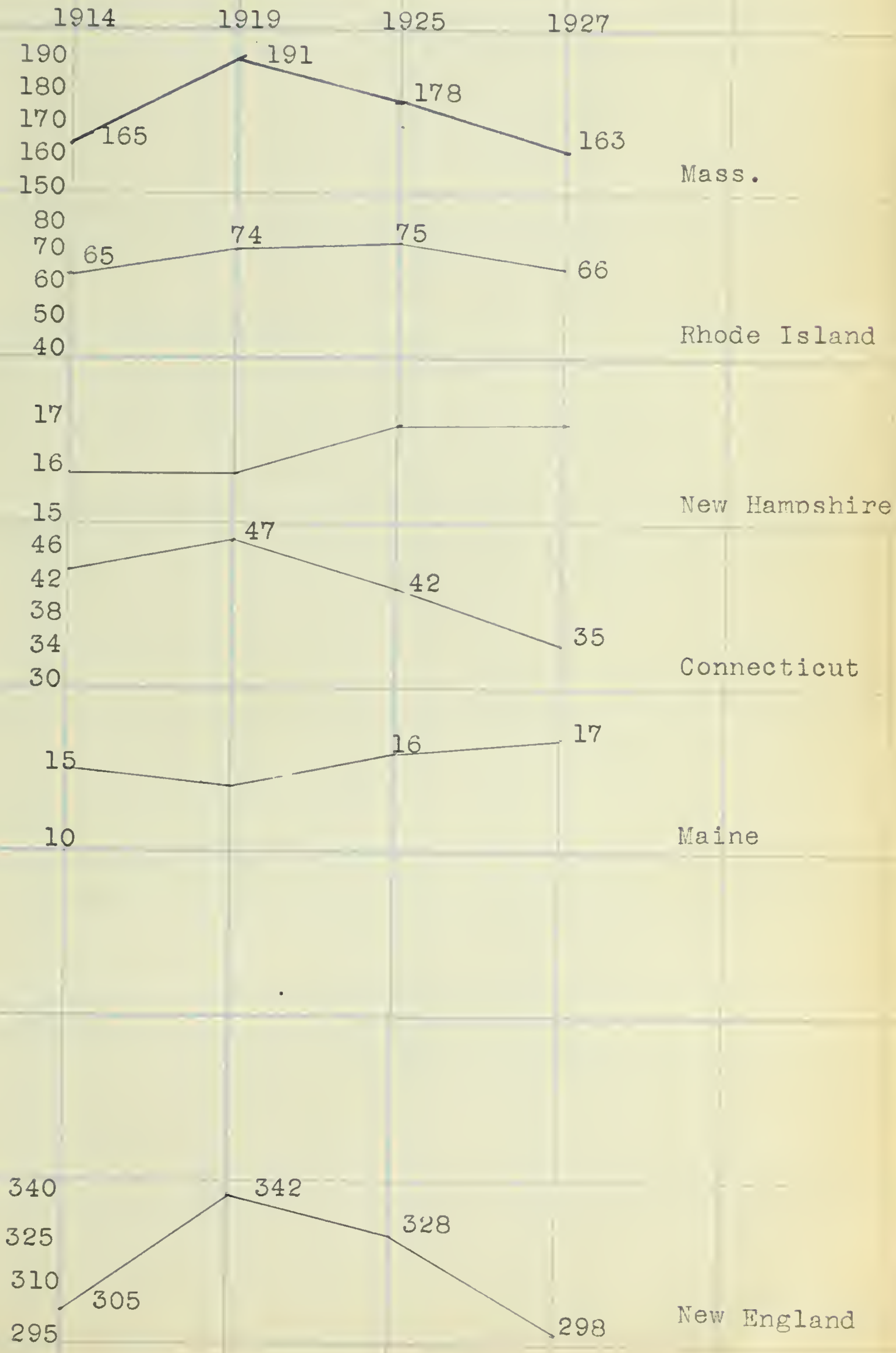
Pages 815-1066-794

CHAPTER VIII.

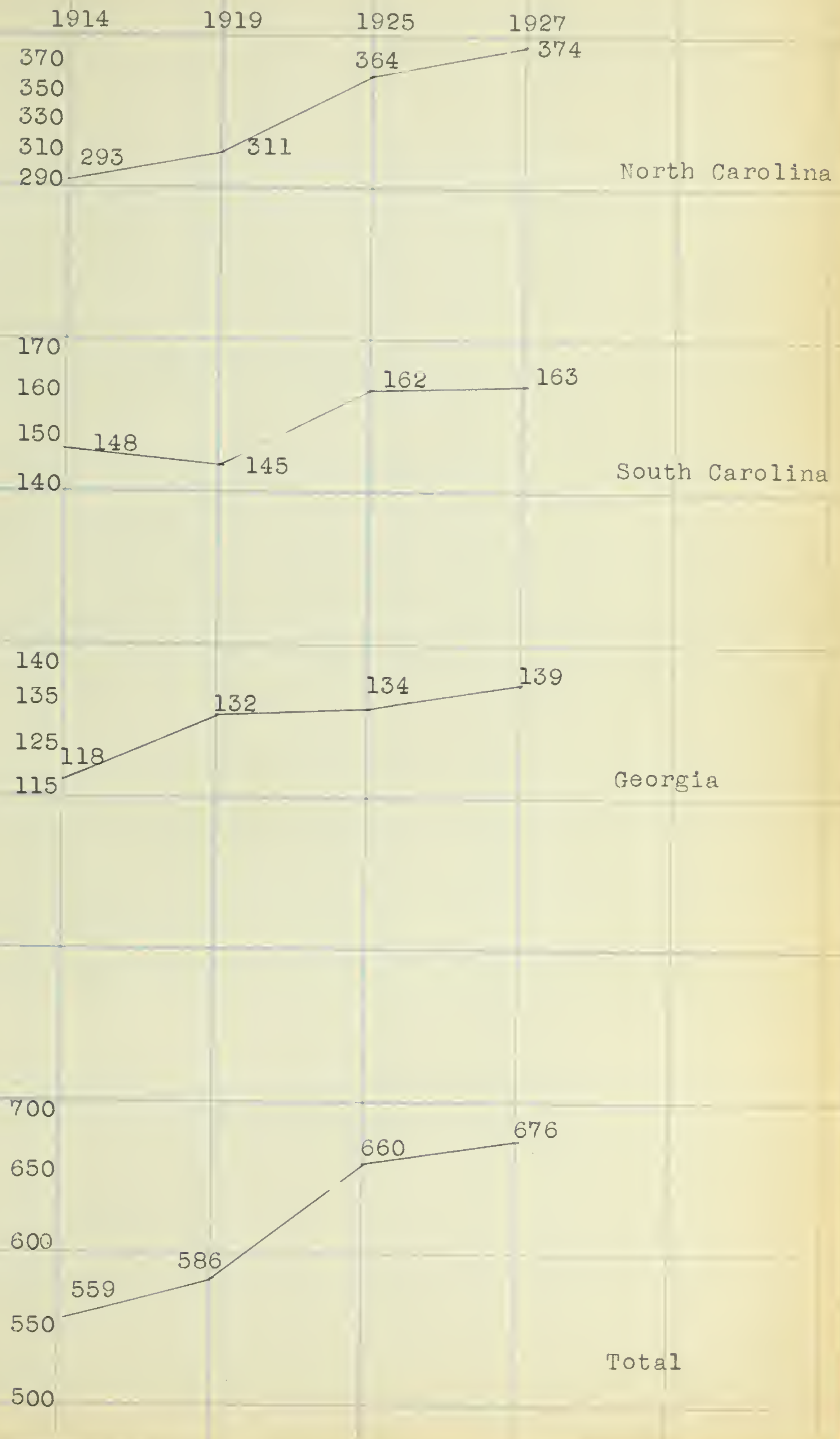
A CHART SHOWING THE TREND OF THE LEADERS SINCE 1914.

TREND

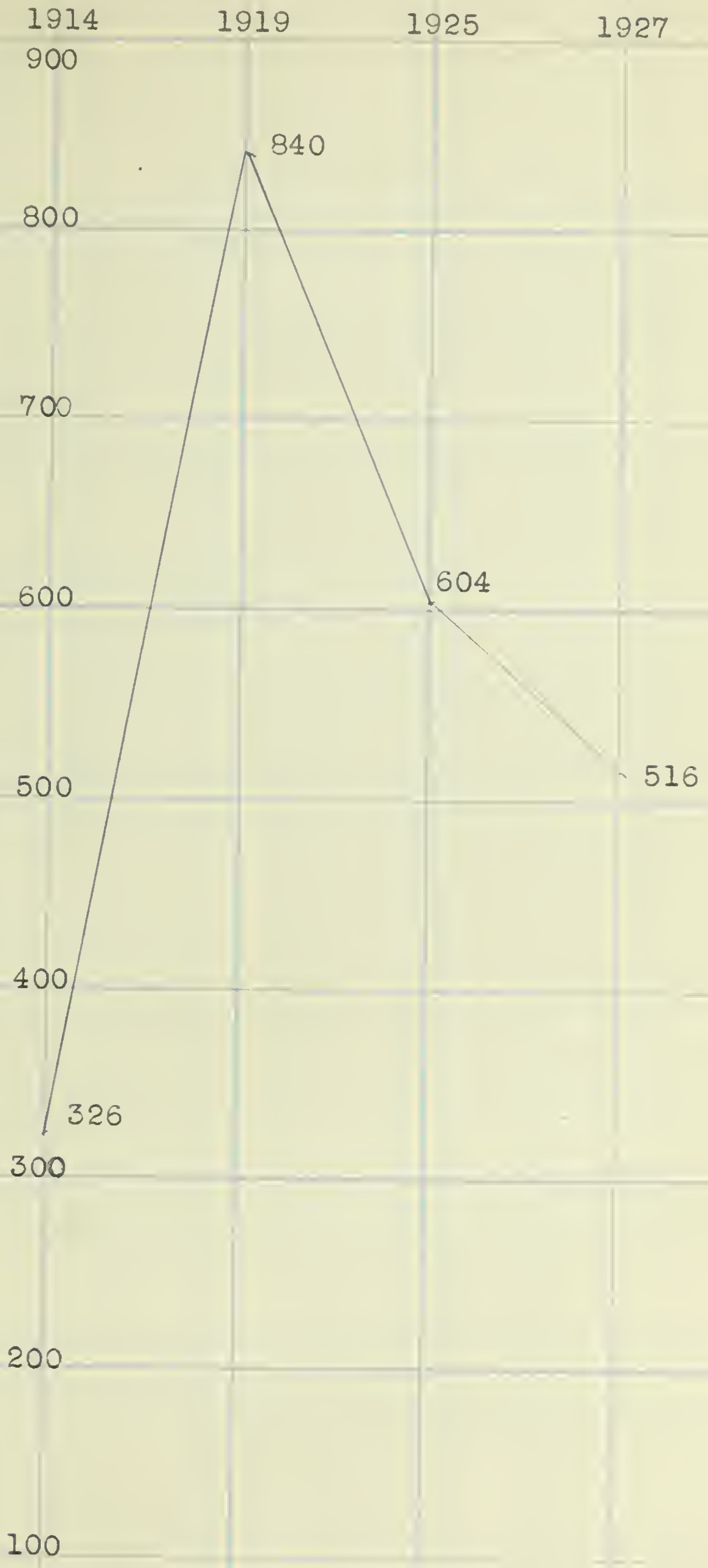
Cotton Goods by Number of Establishments



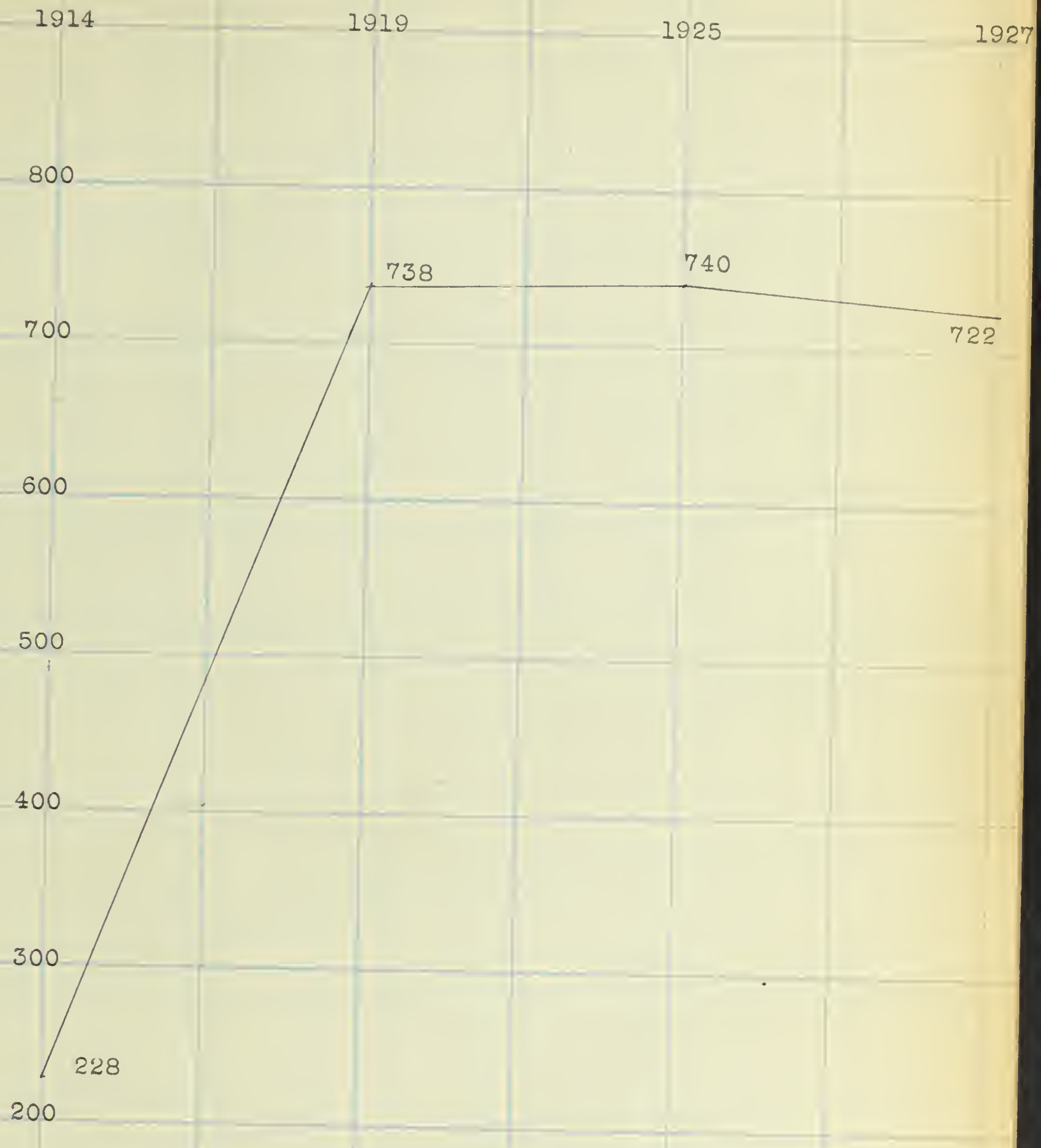
Competing States by Number of Establishments



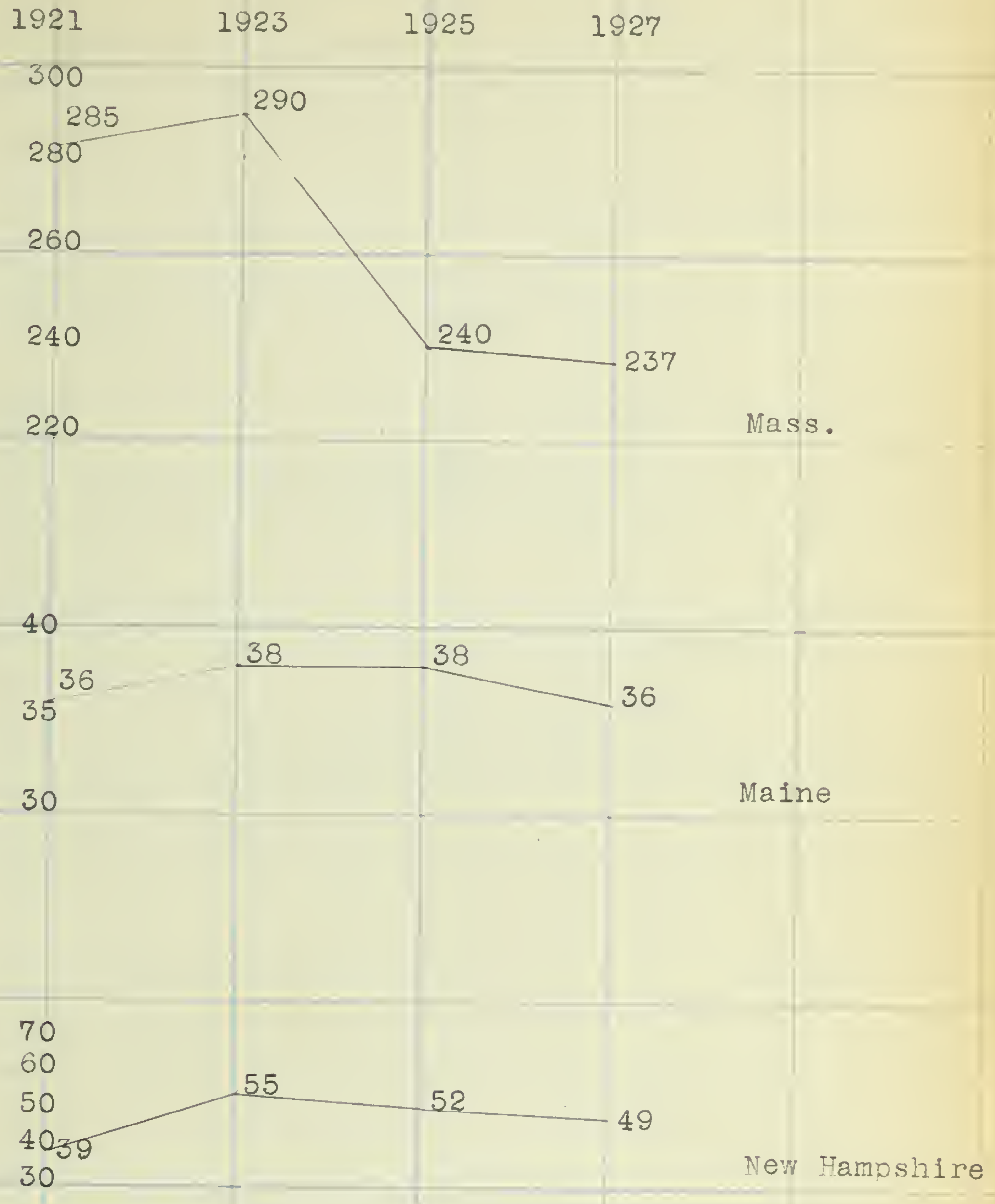
New England Cotton Goods by Value of Products
(in millions)



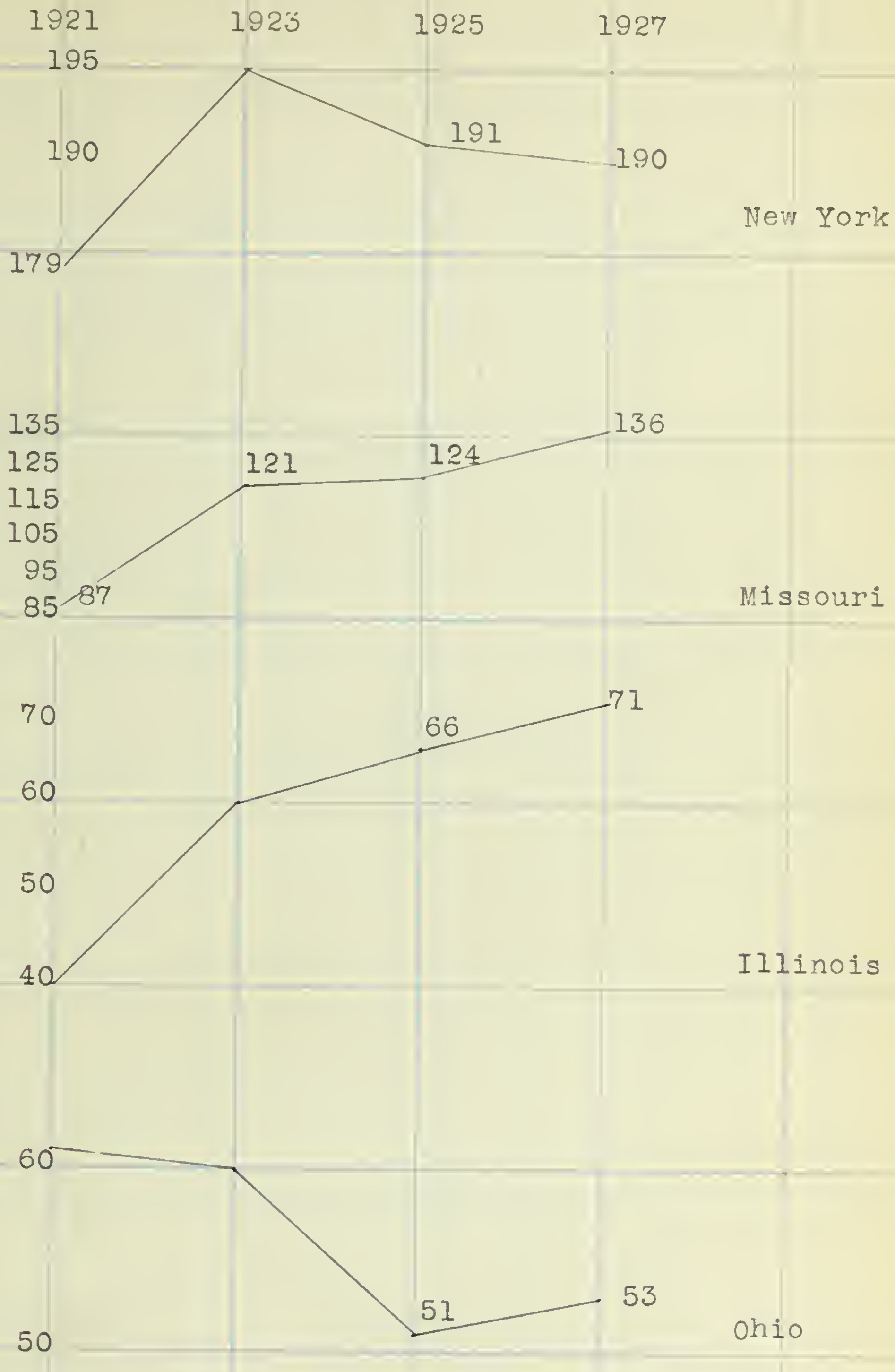
Competing States by Value of Cotton Goods
(in millions)



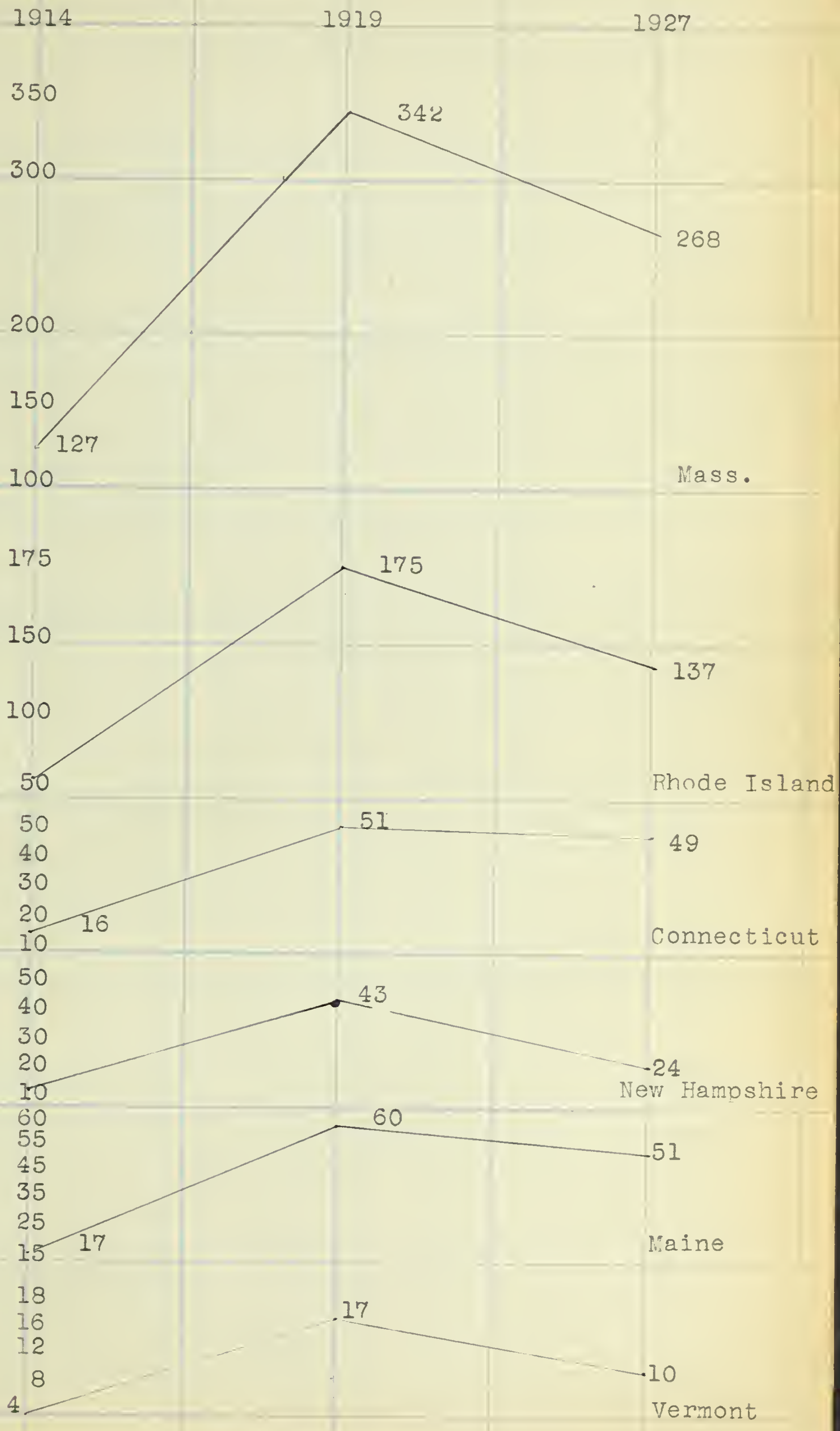
Boots and Shoes other than Rubber by Value of Product
(in millions)



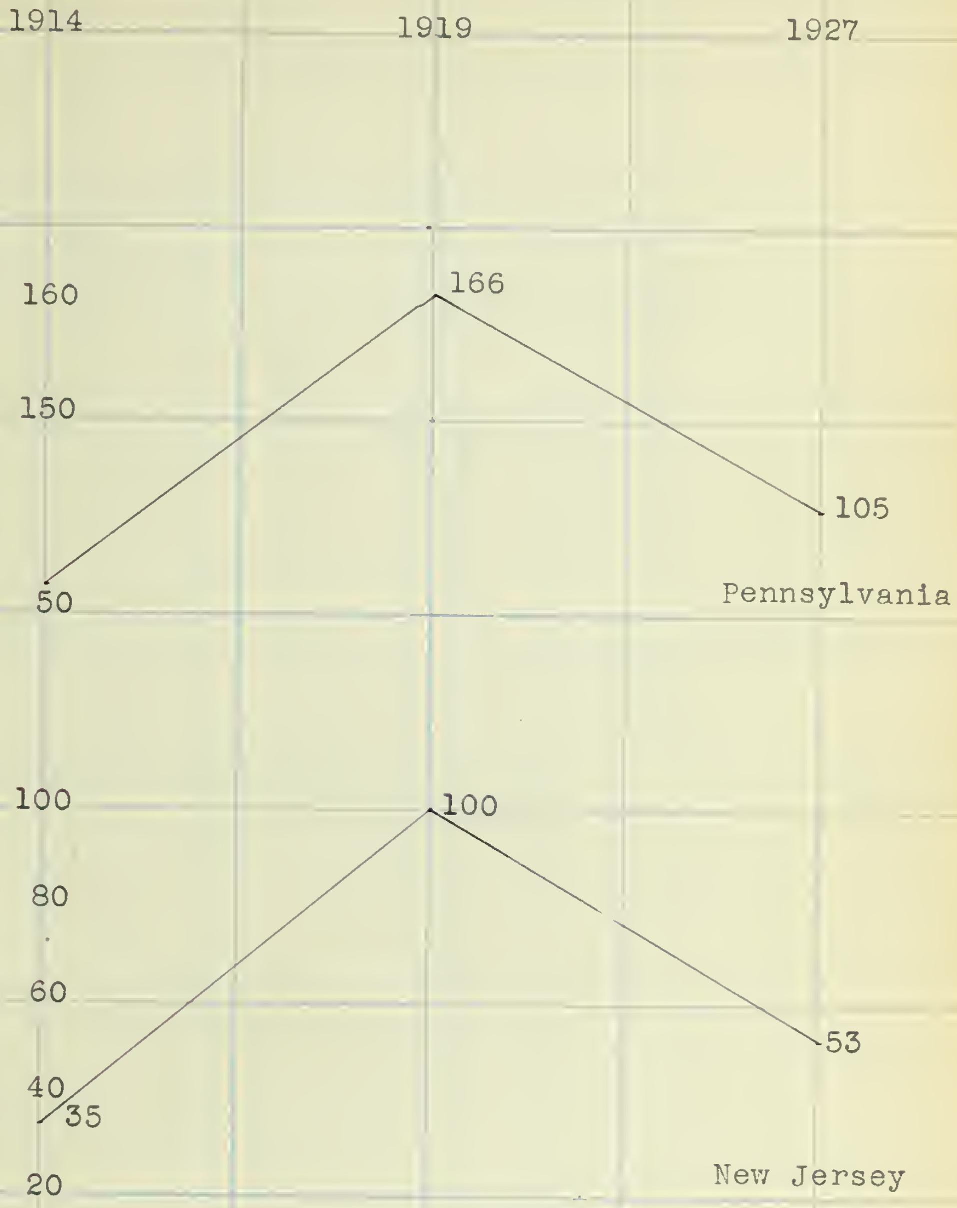
Boots and Shoes other Than Rubber
Competing States by Value of Product
(in millions)



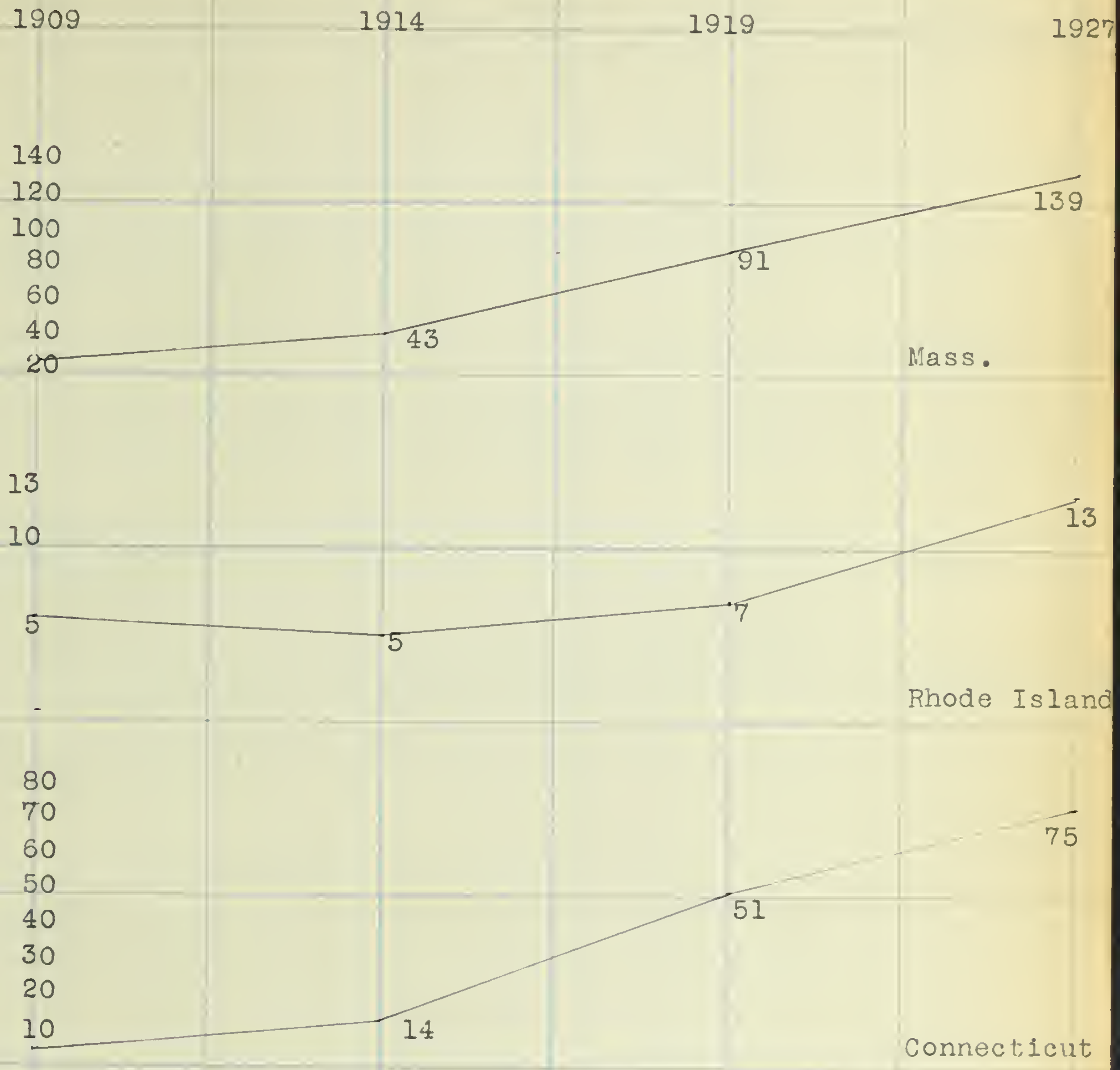
Woolen and Worsted Goods by Value of Product (in millions)



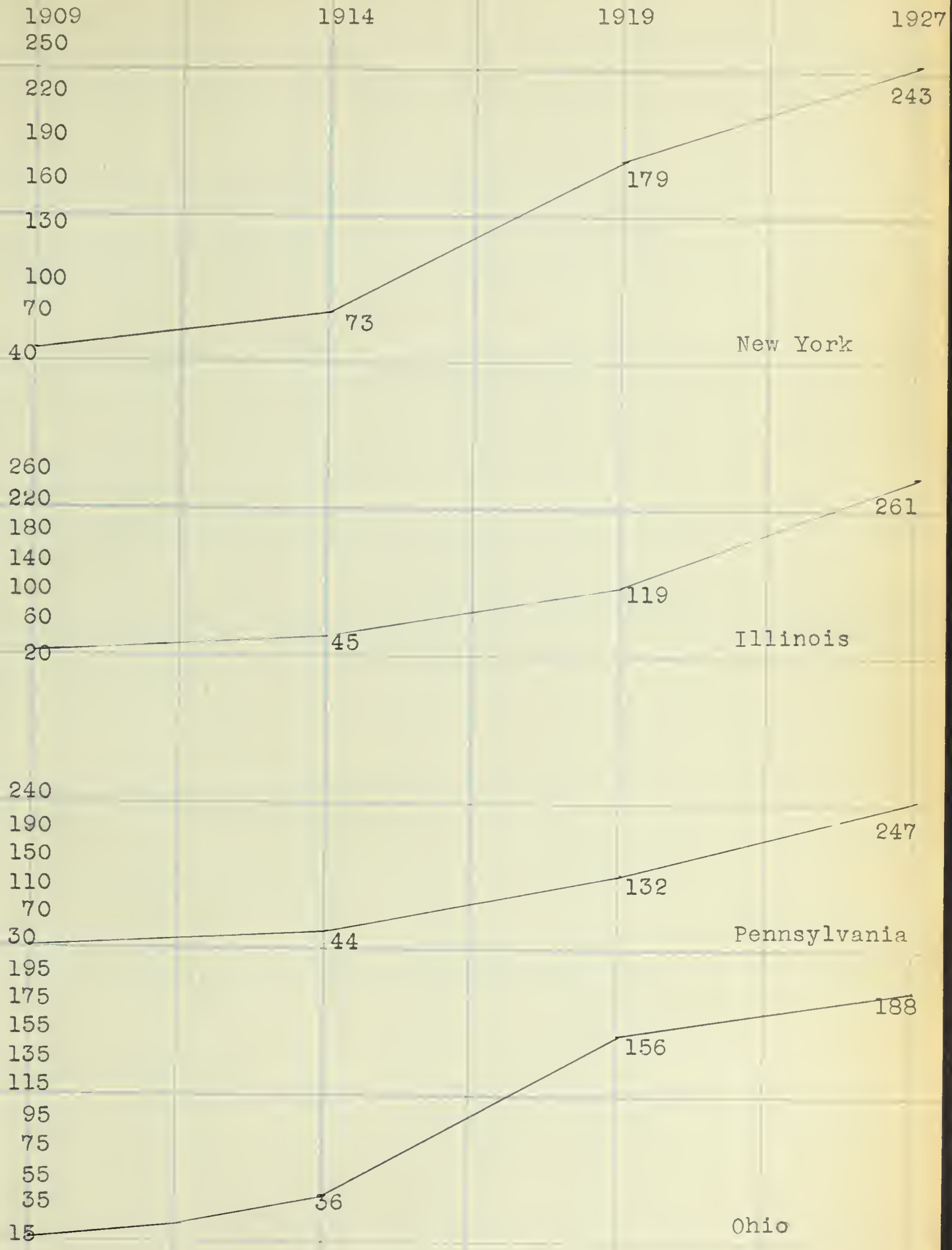
Woolen and Worsted Goods by Competing States and by Value
(in millions)



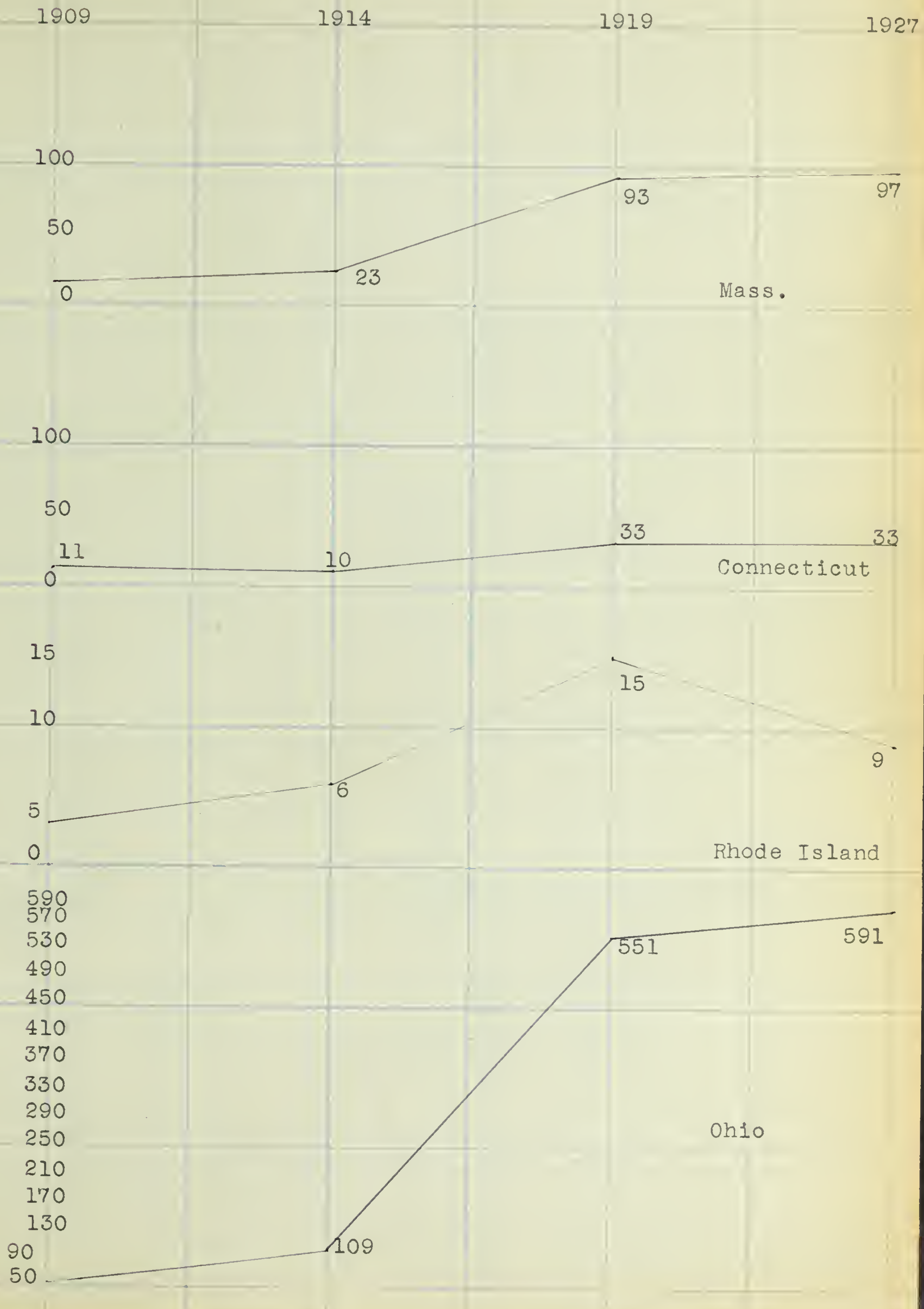
Electrical Machinery by Value of Product
(in millions)



Electrical Machinery by Competing States by Value of Product



Rubber Goods (other than boots and shoes) and Tires and Tubes by Value of Product (in millions)



COTTON GOODS (NEW ENGLAND)

(Thousands omitted)

1914-1927

	Census Year	Number of Establishments	Value of Products
Massachusetts	1927	163	284,706
	1925	178	345,864
	1919	191	596,687
	1914	165	195,482
Connecticut	1927	35	49,177
	1925	42	52,100
	1919	47	101,551
	1914	44	30,191
Rhode Island	1927	66	90,053
	1925	75	107,708
	1919	74	155,488
	1914	65	43,268
New Hampshire	1927	17	57,721
	1925	17	57,868
	1919	16	85,986
	1914	16	35,680
Maine	1927	17	34,414
	1925	16	41,188
	1919	14	56,564
	1914	15	22,122
New England	1927	298	516,071
	1925	328	604,728
	1919	342	840,788
	1914	305	326,743

1927 Census of Manufactures.

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COTTON GOODS (COMPETING DISTRICTS)

(Thousands omitted)

1914-1927

	Census Year	Number of Establishments	Value of Products
North Carolina	1927	374	310,299
	1925	364	316,068
	1919	311	318,068
	1914	293	90,368
South Carolina	1927	163	231,272
	1925	162	230,665
	1919	145	228,440
	1914	148	78,446
Georgia	1927	139	180,509
	1925	134	193,423
	1919	132	192,186
	1914	118	59,982
Total	1927	676	722,080
	1925	660	740,156
	1919	586	738,994
	1914	559	228,602
United States	1927	1347	1,567,400
	1925	1366	1,714,367
	1919	1288	2,125,272
	1914	1179	676,569

1927 Census of Manufactures.

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ACTIVE PRODUCING SPINDLES

By Type, Number and by States

	1909-1927	1909	
	Total	Ring	Mules
United States	27,395,800	22,679,006	4,716,794
Massachusetts	9,372,364	7,282,153	2,090,211
Rhode Island	2,338,689	1,463,346	875,343
Connecticut	1,241,524	818,074	423,450
Maine	1,020,688	859,372	161,316
New Hampshire	1,318,932	1,164,386	154,546
Vermont	91,712	75,872	15,840
North Carolina	2,908,383	2,849,865	58,518
South Carolina	3,754,251	3,731,039	23,212
Georgia	1,747,483	1,677,987	69,496

		1914	
	Total	Ring	Mules
United States	30,815,731	27,123,236	3,692,495
Massachusetts	10,556,867	8,690,775	1,866,092
Rhode Island	2,339,844	1,698,039	641,805
Connecticut	1,276,148	869,572	406,516
Maine	1,098,142	1,012,718	85,424
New Hampshire	1,340,752	1,296,485	44,268
Vermont	136,304	126,104	10,200
North Carolina	3,703,482	3,678,666	24,816
South Carolina	4,552,048	4,548,388	3,660
Georgia	2,043,386	1,998,668	44,718

1927 Census of Manufactures.

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1919

	Total	Ring	Mule
United States	33,718,953	30,578,703	3,140,250
Massachusetts	11,206,855	9,658,340	1,548,515
Rhode Island	2,512,283	1,931,324	580,959
Connecticut	1,256,776	870,510	386,266
Maine	1,091,991	1,049,931	42,160
New Hampshire	1,333,797	1,322,277	11,520
Vermont	141,244	131,024	10,200
North Carolina	4,622,714	4,594,508	28,206
South Carolina	4,949,225	4,947,665	1,560
Georgia	2,459,143	2,405,333	53,810

1927

	Total	Ring	Mule
United States	33,607,939	31,963,821	1,644,118
Massachusetts	8,818,981	7,991,983	826,998
Rhode Island	2,209,116	1,942,274	266,842
Connecticut	1,072,872	768,028	304,844
Maine	1,021,607	1,001,827	19,780
New Hampshire	1,297,205	1,285,705	11,500
Vermont	144,808	134,608	10,200
North Carolina	6,073,027	6,057,419	15,608
South Carolina	5,422,526	5,418,606	3,920
Georgia	2,921,349	2,895,849	25,500

1927 Census of Manufactures.

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COTTON GOODS -- IDLE SPINDLES

By Type, Number and by States

1919-1927

IDLE SPINDLES

	TOTAL		RING		MULE	
	1927	1919	1927	1919	1927	1919
U. S.	1,692,956	612,404	1,430,196	464,136	262,760	148,268
Mass.	1,169,511	231,246	997,603	195,176	171,908	36,070
Conn.	40,400	87,978	10,120	64,554	30,280	23,424
R. I.	132,208	54,939	97,674	27,072	34,534	27,867
Maine	85,481	2,040	85,481	600	---	1,440
N. H.	89,792	9,445	89,792	9,445	---	---
N.Carolina	13,970	39,438	13,370	35,838	600	3,600
S.Carolina	13,552	37,612	13,152	36,512	400	1,100
Georgia	39,233	29,205	39,233	29,205	---	---

1927 Census of Manufactures.

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COTTON GOODS

Summary, 1927

	Number of Establishments	Total Engaged in the Industry
United States	1,347	480,817
Massachusetts	163	93,342
Rhode Island	66	27,243
Connecticut	35	13,123
Maine	17	10,410
New Hampshire	17	15,219
Vermont	4	1,031
North Carolina	374	98,294
South Carolina	163	76,472
Georgia	139	15,764

	Wage Earners (Average for the year)	Wages
United States	467,596	380,909,543
Massachusetts	90,875	88,089,667
Rhode Island	26,203	27,586,550
Connecticut	12,639	13,140,400
Maine	10,195	9,781,130
New Hampshire	14,722	15,142,435
Vermont	1,008	1,054,627
North Carolina	95,786	66,149,960
South Carolina	75,069	49,383,478
Georgia	56,607	36,908,790

1927 Census of Manufactures.

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COTTON GOODS

Summary, 1927

	Materials and Supplies	Fuel and Power
United States	820,687,805	50,904,096
Massachusetts	136,287,013	9,343,865
Rhode Island	42,728,307	2,940,898
Connecticut	24,910,791	1,110,635
Maine	16,619,026	731,538
New Hampshire	25,314,864	1,430,423
Vermont	1,235,006	126,124
North Carolina	171,939,723	12,569,637
South Carolina	126,385,837	8,699,190
Georgia	101,240,225	5,642,058

	Value of Products	Value added by manufacture
United States	1,567,400,612	695,808,711
Massachusetts	284,706,007	139,075,069
Rhode Island	90,053,620	44,384,415
Connecticut	49,177,763	23,156,337
Maine	34,414,143	17,063,579
New Hampshire	57,721,546	30,949,259
Vermont	3,145,790	1,754,660
North Carolina	310,299,158	125,789,798
South Carolina	231,272,599	96,187,572
Georgia	180,509,334	73,627,061

1927 Census of Manufactures.

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BOOTS AND SHOES OTHER THAN RUBBER

1921-1927

(Thousands omitted)

	Census Year	Number of Establishments	Wage Earners Average for the year	Wages
United States	1927	1357	203,110	225,000
	1925	1460	206,992	225,778
	1923	1606	225,216	250,346
	1921	1505	183,503	204,954
Massachusetts	1927	469	55,986	65,282
	1925	537	57,405	25,497
	1923	595	69,397	82,916
	1921	543	64,494	76,395
Maine	1927	44	9,740	9,044
	1925	39	9,633	9,183
	1923	45	9,737	9,322
	1921	43	9,730	8,806
New Hampshire	1927	63	12,114	12,151
	1925	59	12,275	11,911
	1923	65	13,589	13,655
	1921	57	----	8,566

	Census Year	Horsepower	Cost of Material	Value of Products
United States	1927	138,706	494,553	944,714
	1925	139,569	481,632	925,383
	1923	128,550	527,457	1,000,078
	1921	-----	478,432	3,890,043
Massachusetts	1927	35,970	120,354	237,517
	1925	33,252	119,765	240,944
	1923	35,066	146,721	290,674
	1921	----	147,350	285,102
Maine	1927	6,205	19,284	36,663
	1925	6,137	19,927	38,114
	1923	6,284	19,173	38,833
	1921	---	21,194	36,341
New Hampshire	1927	8,288	30,008	49,853
	1925	8,665	29,357	52,632
	1923	8,528	32,753	55,036
	1921	---	23,843	39,243

1927 Census of Manufactures.

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BOOTS AND SHOES OTHER THAN RUBBER

COMPETING STATES

1921-1927

(Thousands omitted)

	Census Year	Number of Establishments	Wage Earners Average for the year	Wages
New York	1927	318	35,828	51,969
	1925	334	39,157	54,218
	1923	367	41,277	54,713
	1921	343	33,552	44,899
Missouri	1927	68	24,277	22,874
	1925	68	24,003	22,899
	1923	65	23,019	22,235
	1921	60	15,245	14,570
Illinois	1927	57	14,038	13,421
	1925	60	13,933	13,201
	1923	60	12,087	12,603
	1921	48	7,809	7,752
Ohio	1927	48	12,993	14,016
	1925	57	12,768	13,528
	1923	60	13,886	15,102
	1921	63	13,346	14,489

	Census Year	Horsepower	Cost of Material	Value of Product
New York	1927	24,133	95,013	190,936
	1925	26,630	100,539	191,375
	1923	22,235	101,729	195,082
	1921	----	98,678	179,562
Missouri	1927	16,880	75,883	136,998
	1925	18,418	67,840	124,328
	1923	12,887	71,494	121,830
	1921	----	53,275	87,715
Illinois	1927	10,345	35,623	71,628
	1925	10,526	33,163	66,367
	1923	7,871	33,487	60,332
	1921	---	23,391	40,318
Ohio	1927	10,633	26,723	53,289
	1925	8,913	26,076	51,547
	1923	8,739	28,414	60,731
	1921	---	31,431	61,904

1927 Census of Manufactures.

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SHOE PRODUCTION

By States, Type and Number of Pairs

1929

	Total	Men's	Boy's and Youth's
United States	361,402,183	94,770,112	22,992,557
Massachusetts	83,539,555	21,632,457	2,456,044
New Hampshire	22,975,832	9,655,423	2,242,137
Maine	16,400,103	3,279,843	511,885
New England	122,915,490	34,567,723	5,210,066
New York	76,007,949	15,199,143	5,115,290
Missouri	50,745,213	16,991,016	6,066,242
Illinois	27,870,945	4,353,495	1,299,440
Wisconsin	19,483,253	10,577,126	1,476,007
Pennsylvania	17,232,118	3,009,871	1,704,804

	Women's	Misses' and Children's	All Others
United States	131,303,209	39,539,555	72,409,479
Massachusetts	40,148,328	5,507,301	13,795,425
New Hampshire	7,266,393	2,712,620	1,099,259
Maine	9,348,712	938,378	2,321,285
New England	57,763,433	9,158,299	17,215,969
New York	21,670,810	5,562,513	28,459,923
Missouri	19,003,592	5,092,128	3,592,235
Illinois	9,989,880	5,196,654	7,031,476
Wisconsin	2,928,532	2,568,622	1,932,966
Pennsylvania	3,401,433	5,528,114	3,587,896

Furnished by The New England Council.

SHOE PRODUCTION

By States, Type and Number of Pairs

1930

	Total	Men's	Boy's and Youth's	Women's	Misses' and Children's	All Others
United States	304,169,748	77,146,803	18,530,222	112,628,839	32,036,504	63,827,381
Massachusetts	40,424,640	13,836,258	4,836,258	15,675,855	3,253,927	2,774,521
New Hampshire	20,743,332	8,032,128	1,989,558	7,630,244	2,322,362	769,040
Maine	14,616,311	2,598,078	573,276	8,469,057	1,102,968	1,872,932
New England	75,784,283	24,466,464	7,399,092	31,775,156	6,679,257	5,416,493
New York	69,041,978	12,960,655	3,954,567	19,203,274	5,732,184	27,191,298
Missouri	40,424,640	13,836,258	4,884,079	15,675,855	3,253,927	2,774,521
Illinois	21,392,976	2,949,022	985,968	8,991,500	2,830,092	5,636,394
Wisconsin	16,007,089	8,626,255	992,073	2,021,439	2,654,864	1,712,458
Pennsylvania	13,211,846	2,168,687	1,497,909	2,565,791	3,989,697	3,008,581
Ohio	11,280,099	718,151	598,748	8,548,506	928,117	486,577

Furnished by The New England Council, Boston, Mass.

SHOE PRODUCTION

By States, Type and Number of Pairs

1931

	Total	Men's	Boy's and Youth's
Massachusetts	72,793,702	16,190,908	3,051,589
New Hampshire	22,420,363	8,057,480	1,872,153
Maine	15,653,950	2,923,317	908,045
New England	110,868,015	27,171,705	5,831,787
New York	73,777,340	15,733,639	5,025,858
Missouri	40,305,501	14,088,714	4,995,306
Illinois	22,346,464	2,145,348	821,004
Wisconsin	14,408,347	7,703,755	777,451
Pennsylvania	15,000,445	2,197,495	1,305,264

	Women's	Misses' and Children's	All Others
Massachusetts	35,352,202	4,899,028	13,433,582
New Hampshire	9,118,122	2,282,091	1,090,517
Maine	8,732,421	1,029,516	2,060,657
New England	53,202,745	8,210,635	16,584,756
New York	16,990,901	6,713,995	29,312,947
Missouri	13,259,577	4,184,722	3,777,182
Illinois	10,163,159	2,757,803	6,459,150
Wisconsin	1,963,841	2,548,577	1,415,323
Pennsylvania	2,846,287	3,935,520	4,715,879

Furnished by The New England Council, Boston, Mass.

WOOLEN AND WORSTED GOODS

1914-1927

(Thousands omitted)

	Census Year	Number of Establishments	Value of Product
United States	1927	779	817,978
	1919	852	1,065,434
	1914	799	132,987
Massachusetts	1927	174	268,835
	1919	182	342,626
	1914	156	127,351
Rhode Island	1927	95	137,566
	1919	88	175,312
	1914	80	60,889
Maine	1927	59	51,873
	1919	66	60,327
	1914	57	17,531
Connecticut	1927	40	49,944
	1919	44	51,285
	1914	49	16,578
New Hampshire	1927	35	24,143
	1919	44	45,944
	1914	40	15,039
Vermont	1927	16	10,939
	1919	18	17,426
	1914	17	4,635
Pennsylvania	1927	146	105,622
	1919	197	166,715
	1914	186	63,113
New Jersey	1927	24	53,368
	1919	26	100,325
	1914	26	35,739

1927 Census of Manufactures.

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WORSTED GOODS

Comparison 1927

	Number of Establishments	Total Engaged in the Industry	Horsepower	Wage Earners (Average for the year)	Wages
United States	228	97,456	364,422	92,571	101,665,747
Massachusetts	75	36,941	156,421	35,141	38,665,775
Maine	9	4,392	10,936	4,244	4,642,346
Connecticut	11	3,276	5,987	3,055	4,397,185
Rhode Island	71	21,995	72,244	21,114	22,338,332
Pennsylvania	67	11,187	30,177	10,546	11,491,549
New Jersey	16	9,510	38,943	8,777	10,734,246
New York	15	3,705	14,519	3,472	3,571,839

	Materials and Supplies	Fuel and Power	Value of Products	Value added by Manufacture
United States	319,629,109	9,778,500	516,669,556	187,261,947
Massachusetts	118,280,421	4,528,532	195,095,492	72,286,539
Maine	10,835,345	532,379	21,849,221	10,481,497
Connecticut	14,386,598	286,585	22,103,275	7,430,092
Rhode Island	77,383,648	2,141,389	118,310,113	38,785,076
Pennsylvania	41,941,567	760,425	63,790,023	21,088,031
New Jersey	27,820,243	701,891	47,781,728	19,259,594
New York	10,264,591	405,536	17,675,747	7,005,620

1927 Census of Manufactures.

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WOOLEN GOODS

Comparative Summary

	Number of Establishments	Total Engaged in the Industry	Horse-power	Wage Earners (Average for The year)	Wages
United States	471	65,509	191,703	61,790	72,156,158
Massachusetts	99	16,792	52,148	15,923	19,368,612
Connecticut	29	6,294	16,307	5,938	7,265,284
Rhode Island	24	3,454	7,158	3,275	4,161,577
Maine	50	6,570	21,012	6,140	7,525,452
New Hampshire	35	5,279	18,463	5,007	6,141,099
Vermont	15	2,769	9,665	2,619	3,058,143
Pennsylvania	79	7,174	21,373	6,718	8,106,544
New York	23	2,766	9,094	2,631	3,292,790
New Jersey	8	1,235	3,493	1,176	1,500,856

	Materials and Supplies	Fuel and Power	Value of Products	Value added by Manufacture
United States	166,321,575	6,378,658	301,308,743	128,608,510
Massachusetts	38,652,470	1,688,572	73,740,314	33,399,272
Connecticut	15,032,100	601,812	27,841,649	12,207,737
Rhode Island	11,270,626	326,394	19,256,063	7,659,043
Maine	16,331,875	633,305	30,024,987	13,059,807
New Hampshire	12,615,827	531,154	24,143,480	10,996,499
Vermont	6,672,720	309,036	10,939,729	3,957,973
Pennsylvania	26,437,128	680,476	41,832,191	14,714,587
New York	6,866,244	323,817	13,368,908	6,178,847
New Jersey	2,984,228	120,627	5,587,632	2,482,777

1927 Census of Manufactures.

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ELECTRICAL MACHINERY

(New England)

1909-1927

(Thousands omitted)

	Census Year	Number of Establishments	Value of Product
Massachusetts	1927	122	139,348
	1919	110	91,939
	1914	91	43,869
	1909	83	28,143
Connecticut	1927	70	75,926
	1919	54	51,911
	1914	43	14,330
	1909	41	9,824
Rhode Island	1927	14	13,354
	1919	13	7,567
	1914	13	5,468
	1909	12	6,410
New Hampshire	1927	6	886
	1919	7	1,464
	1914	6	352
	1909	6	388
United States	1927	1,777	1,637,307
	1919	1,404	977,968
	1914	1,030	335,170
	1909	1,009	221,309

1927 Census of Manufactures.

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ELECTRICAL MACHINERY

COMPETING STATES

1909-1927

(Thousands omitted)

	Census Year	Number of Establishments	Value of Product
New York	1927	298	243,209
	1919	255	179,973
	1914	215	73,945
	1909	217	49,290
Ohio	1927	206	188,763
	1919	189	156,924
	1914	119	36,121
	1909	115	18,777
Illinois	1927	258	261,089
	1919	161	119,528
	1914	142	45,667
	1909	143	26,826
Pennsylvania	1927	136	247,442
	1919	129	132,674
	1914	105	44,396
	1909	84	31,351
New Jersey	1927	137	173,932
	1919	105	120,341
	1914	76	40,741
	1909	69	28,365

1927 Census of Manufactures.

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ELECTRICAL MACHINERY

SUPPLIES AND APPARATUS

Comparative Summary 1927

	Number of Establishments	Total Engaged in the Industry	Horse-power	Wage Earners (Average for the year)	Wages
United States	1,777	306,968	661,168	241,556	336,238,750
Massachusetts	122	30,817	95,191	24,759	33,903,793
Rhode Island	14	1,692	6,797	1,431	1,914,088
Connecticut	70	16,889	41,715	14,500	16,998,723
New Hampshire	6	286	665	253	226,296
Illinois	258	46,600	66,689	34,626	52,502,568
Pennsylvania	136	50,063	141,728	37,020	52,415,303
New York	298	47,960	91,620	39,021	55,820,625
Ohio	206	30,288	61,565	24,423	32,386,890

	Materials and Supplies	Fuel and Power	Value of Products	Value added by Manufacture
United States	626,617,053	19,144,646	1,637,307,035	991,545,336
Massachusetts	40,036,378	2,161,512	139,348,725	97,150,835
Rhode Island	7,374,218	197,530	13,354,654	5,782,906
Connecticut	33,724,561	1,074,503	75,926,216	41,127,152
New Hampshire	344,279	8,578	886,723	533,866
Illinois	90,857,800	1,758,258	261,089,307	168,473,249
Pennsylvania	91,106,707	3,631,678	247,442,426	152,704,041
New York	97,419,189	3,237,396	243,209,371	142,552,786
Ohio	76,754,312	2,206,991	188,763,978	109,802,675

1927 Census of Manufactures.

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RUBBER GOODS (Other than boots and shoes)

AND TIRES AND TUBES

1909-1927

(Thousands omitted)

	Census Year	Number of Establishments	Value of Product
Connecticut	1927	19	33,589
	1919	21	33,928
	1914	18	10,188
	1909	13	11,005
Massachusetts	1927	64	97,717
	1919	47	93,376
	1914	42	23,011
	1909	29	15,796
Rhode Island	1927	7	9,605
	1919	6	15,887
	1914	6	6,089
	1909	5	3,143
	Competitor.		
Ohio	1927	115	597,541
	1919	96	551,118
	1914	54	109,659
	1909	37	53,911
United States	1927		
	1919	437	987,088
	1914	301	223,611
	1909	227	128,436

1927 Census of Manufactures.

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CHAPTER IX.

A COMPARISON OF NEW ENGLAND'S LEADERS WITH COMPETING DISTRICTS.

NEW ENGLAND'S COMPETITORS

(By value of product, in 1927)

I.

COTTON GOODS

North Carolina	$310,299,158
South Carolina	231,272,599
Georgia	180,509,334
	$722,081,091

II.

WORSTED GOODS

Pennsylvania	$ 63,790,023
New Jersey	47,781,728
New York	17,675,747
	$129,247,498

1927 Census of Manufactures.

Pages 266 and 434

III.

BOOTS AND SHOES OTHER THAN RUBBER

New York	$190,936,000
Missouri	136,998,000
Illinois	71,628,000
Ohio	53,289,000
	$452,851,000

IV.

ELECTRICAL MACHINERY SUPPLIES AND APPARATUS

Illinois	$261,089,307
Pennsylvania	247,442,426
New York	243,209,371
Ohio	188,762,978
New Jersey	173,932,303
	$1,114,436,385

1927 Census of Manufactures.

Pages 815 and 1066

CHAPTER X.

THE TREND OF FACTORY RE-LOCATION AND BRANCH PLANTS.

The movement toward factory re-location and branch plants is a product of the merger and consolidation era. It is true that such a movement has been in use since the early age of the industrial world. There were many sound economic reasons behind the branch plant movement, especially when markets had so expanded that distribution from a single source became impossible. Furthermore, competition actually forced the creation of branch plants, as production costs and service were getting into realm beyond the manufacturers control.

The "machine age" which has showered immense wealth on industry, has also brought many misfortunes. Invention was not confined to particular industries, so that the advantages bestowed on one industry wrought havoc on others. Any factory that was content to rest on past business laurels, soon discovered that the business barometer had dropped to frozen assets, and his most powerful competitor was sound management.

The early industrialist considered only production, because the market was fixed in position and boundless in breadth. However, the center of population gradually broke away from its moorings and headed out to the sea of different location. The machine reinforcements then were summoned to bolster up the weakness of production costs.

At the same time, the membership of each industrial organization was rising and competition set in. The struggle was now on in earnest; the market continued unsettled, the competition became more intense, new organizations were

benefiting by the experience of the pioneers, invention resounded to the thoughtful, substitution now ruined former staple business, and production costs curtailed ambition.

Thus, the panic was on. Re-location was the slogan of the hour. Any disorganized plant soon clung to this idea as a panacea for business fatigue.

The purpose of our entering this phase of the subject is to show that some factory re-locations are economically necessary.

New England Industries are not immune to this contagious disease of unreasonable re-location, so that a review of the fundamentals affecting some of the reasons behind re-location must be made. P. V. Bunn clearly expresses his idea on the matter when he states that "industries are not chessmen".1)

Chambers of Commerce are now developing the habit of combing the country for new industries to fill the ranks of the industrial parade. In many cases the expenditures would be better invested in local improvement, instead of importing industries indiscriminately. Many industries by their very nature cannot succeed in some localities. Added to this, is the fact that successful industries in one place may be total failures in another.

The seriousness of the re-location movements is appalling, when one considers the ten mid-western cities that unknowingly traded industries, under the disguise of re-locations, and there was no increase of pay-roll accompanying the transaction. Was this an economic move? The

1) Nations'Business--"Industries are not Chessmen".
18:13/1 February 1930.

railroads were the ones to profit by such heedlessness.

The caution, which each Chamber of Commerce must use, behooves them to look deeply into these prospective industries and extend the courtesy of the city only to those who can profit by such a location. W. Gerald Holmes suggests common sense as the standard in selecting new industries because cities profit or lose in accordance with their industries.1)

The basic principle upon which an industry contemplates re-location is to reduce production costs. Not only are costs to be lower but more efficiency must result so that manufacture can withstand the assault of competition. The hold of every industrial ship has often concealed disastrous waste, and when the storm of sound business competition punctured her side, this devastating gas evaporated into the atmosphere of loss. How often have raw materials been imported into New England and then sold to the region from which they originated. In rare cases, the goods can be finished here at less expense, but these are the exception.

To the present, we have considered only competition within the confines of the United States. Now the problem becomes more difficult as we ponder over the foreign competitor, whose prices can be reduced because of cheap labor and raw materials.

The only offensive weapon that manufacturers can use is greater production and lower production cost to weaken the adversary.

In the first consideration of the re-location of a plant or industry, any corporation will profitably utilize

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1) Nations' Business "Common Sense is the Best Subsidy". 74-75 October 1930

its time to answer the following questions:

1. What is the minimum of average distance from the sources of raw material?

2. What is the annual freight bill on raw material; fuel; finished products?

3. What is the distance from your present and future center of distribution?

4. What is the kind and cost of power?

5. What is the percentage of labor cost to the dollar sales volume?

6. What is the labor turnover of the plant?

7. Is your city a center for your industry?

8. Is your present location an open or closed shop town?

9. What are local labor conditions?

10. Is your machinery new or old?

11. What are the present advantages of your location?

Having truthfully answered these questions, a manufacturer has established a sound premise upon which to base his conclusion, provided due importance is given to the peculiarities of the industry.

Basically, any industry should locate between the source of raw material and the distribution area, however, it requires higher mathematics to determine this point. It is highly improbable that any industry is justified in relocating on single reasons. But when there is such an accumulation of obstacles, as a shifting of population regions; a change of buying habits and customs; new competitors; com-

peting lines; distribution changes; then production and distribution costs are so estranged that the re-location is absolutely necessary.1)

John A. Pequit points out that "the direction of plant re-location is toward the suburban town of 30,000 to 150,000 population". In 1929, there were between eight hundred and one thousand re-locations according to the same author. His reasons for this change are: one, the growth of the United States; two, the increase of production and purchasing power; three, the increase of power lines to points all over the country; four, good roads which have facilitated transportation; five, new consuming areas, brought about by new products and so the new location caused the former plants to grow obsolete; and six, the great expansion of the South in population and purchasing power.2)

Formerly, the criterion of good location was to monopolize cities of one hundred thousand, but the location vane now points toward the suburban town. The impediments against such a location now, are congestion, and the resultant inefficiency, high costs of production, and labor troubles.

C. W. Cuno indorses the statement that the direction of industrial location is toward the small town, but he points out that only ten percent of the plants gained by towns are re-locations, and eighty percent are new local industries.3)

1) John A. Pequit--Factory and Industrial Management
40: 70-72 January 1929

2) John A. Pequit--Factory and Industrial Management
77: 491-3 March 1929

3) C. W. Cuno--The Migration of Industry--American Chemical
Engineer 22:588-90 June 1930

The industries are not only changing cities, but there is definite trend of Middle Atlantic States now moving into Connecticut and Massachusetts, while the industries of the latter are headed toward the middle Atlantic States.

Cotton and rayon definitely hold to a southern course, and machinery, boots and shoes have pushed on to the St. Louis area.

"That the change is actually taking place in industry, cannot be doubted for, from 1926 to 1929 inclusive New England gained 902 new plants and 23,619 employees. This means that by taking the losses of plants through removal and suspension away from the total of new plants, the total gain was as stated".1)

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1) New England Council--Facts about New England (Pamphlet).

CHAPTER XI.

FACTORS OF PLANT LOCATION.

"As the spread between selling price and cost of production has been narrowed by competition, variations in the cost of production in plants operated with comparable efficiency, but in different localities, have been emphasized. If the best cost obtainable by the improvement of plant and management has been reached in a given plant, and yet the spread between this cost and the selling price determined by competition is less than for other plants manufacturing a like product, it is reasonable to conclude that the other plants enjoy advantages which depend upon their location. These advantages may be in labor, power, taxes, rents, or some other factors of the manufacturing process proper; or they may be in the cost of transportation of either raw material or finished goods. No matter what they are, if peculiar to location, the resulting cost differential against the plant which does not have them, or others to compensate them, is beyond the control of management except by change of location." 1)

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1) Plant Location by W. Gerald Homes, page 2--Mc Graw Hill 1930.

XI. (a)

DISTANCE FROM RAW MATERIAL.

The economics of plant location was unknown, in the primitive days of business organization. The usual routine was to select the most convenient site, which in most cases, was the producer's own neighborhood. Since production served only a local area, this practice was economic at that time. Unconsciously, the early manufacturer emphasized the importance of locating near the source of raw material, for his plant was erected near the only material with which the producer was familiar. The nature of the market was irrelevant since production could meet only a limited demand.

Since that time, business has expanded immeasurably; manufacturing methods have improved, and markets have varied infinitely. Today, customary action, convenience and guess work, stamp any concern with absolute failure. There is no place in the industrial field for such carelessness. Competition forbids this, for any increase in manufacturing costs means decreasing the return on invested capital. Dollars--and dollars alone--is the manufacturer's objective, for competitive methods disregard particular persons or places.

Raw materials rank with the market as of first importance in determining location. According to figures reported by the 1925 Census of Manufactures the percentage of value of products accounted for by the cost of raw materials were: "58.6 for textiles and their products; 57.4 for leather and its manufactures; 57.3 for rubber products; and 39.5 for machinery." 1)

In the New England textile industry, the chief source of raw material is cotton. This must be purchased outside of

1) Plant Location by W. Gerald Holmes. Page 27--McGraw Hill 1930

our borders. All our competitors, and especially the South, have a tremendous advantage over us in being closer to the cotton fields. This asset not only gives the South the benefit of less transportation costs, but better service, better return on capital investment, and a reduced operating expense. Chambers of Commerce in the South, however, have exaggerated the value of this asset. The Census of Manufactures shows that the supply of cotton, in any southern state, is insufficient to meet the yearly demand of the mills in its own state. Therefore, when cotton is imported, expenses will equal those of the northern mill buying from the same source. The long fiber cotton of Texas is considered the best for textile purposes; this is what is used in New England mills. The native southern cotton has a small fiber, and is harder to work, thereby retarding the production speed. However, if any of the southern states can supply half of the local demand, that percentage must give that corresponding benefit. If it is necessary to import, they can manufacture with the same raw material cost as the North. The southern exaggeration merely avoids the fact that the South and cotton are not synonymous, as the Northerner thinks.

The most important raw material used in the worsted industry is wool. Whenever cotton is combined with the wool, the former is obtainable within New England.

The wools, consumed in the United States, are about evenly divided between foreign and domestic fibers. The chief source of these materials is Boston, Massachusetts. Here, the world's largest wool market is located. About sixty percent of the wool sales, for the United States, are

made through the Boston exchange. By reason of its location and market, Boston is the destination of the largest volume of foreign imports. By industrial comparison, New England woolen mills profit as much by their proximity to the wool market, as does the southern mill in the cotton industry.

Transportation rates are practically nil, for all our woolen centers can be reached, within one day, from Boston. Philadelphia is the home of an important woolen exchange. The competing states of Pennsylvania and New Jersey, are satisfactorily situated to be fed from the key city in the "Quaker" state. Irrespective of such favorable conditions, Massachusetts wins the economic plum because the Boston market, alone, provides every facility needed in the handling of wools.

Leather, glue, findings, thread, and cotton fabrics are the basic supplies required in the manufacture of boots and shoes. Although hides and skins are imported from other parts of the United States and foreign countries, the Northeast cannot be said to be poorly located in its proximity to the raw materials needed. Boston has long been known as the world's largest leather market. There is no price differential between Boston and Chicago, the important western exchange.

Tanning is still skillfully performed within our own leather district, so that we are not entirely dependent upon any one section of the leather world. On the whole, Illinois, Missouri, and Ohio gain important economic distinction, in connection with skins and hides, but the variation is so minute that New England overshadows all states, when the

sources of the remaining raw materials is added. When imported hides and skins are required, and many are used in the more expensive shoe, our location is ideal.

Foreign imports can be conveniently utilized in New York. The Midwest, however, cannot compete when using such materials, because freight rates bear too heavy on production costs.

All competing states, in the electrical machinery business, border more closely on raw material than New England. Iron, copper, and coal are within reach of our competitors. This industry is financed in such a manner, that the subject of basic supplies is minimized, for corporations make one purchase which is parceled out to its subsidiaries. Hence, the economic function of the New England electrical plant is not, fundamentally, based on the distance from raw material. The statement, that no one factor determines the location of an industry, can be supported by using the rubber business as an example. The basic material used in this field is crude rubber: an import. Every rubber fabricator in New England can be conveniently serviced in one day from the port of Boston. If the source of raw material were highly significant in this field, Ohio would be a very poor location.

Finally, "so far as the cost of raw material is concerned, the locations will be the best which make resultant freight charges of all raw materials the minimum." 1)

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1) Diemer, Hugo, Factory Organization and Administration
Page 71.

XI. (b)

DISTANCE FROM DISTRIBUTION AREA.

The problem, that confronted the early manufacturer, was one of production; today, the question is one of distribution. The period of the "World War" substantiated the contention that production can always be met. While the war lasted, small establishments continued to grow into important positions because they had speeded up production, to supply an absorbing market, and thereby fattened their incomes. Shortly after the "Armistice" the market contracted, and every industry, large or small, found itself in an over-expanded position. Thus the problem or marketing was introduced and remains unsolved today. When the list of commercial failures is presented, thereon appears those corporations who have neglected to diagnose the changing trend of business.

"Other things being equal, industry locates near the market it serves, since it must necessarily be the result of a demand from the market or an effort to create such a demand." 1)

Actual and potential markets are determined by distribution areas. These zones are selected for distributive purposes because of the density of population residing within its limits. Hence, the direction of the population center forecasts the future markets. Beginning in 1879, this center started a westward migration until today it is located near Cincinnati, Ohio.

The sales areas of manufactured goods are classified as local, national and foreign. Locally, New England goods are sold through wholesale and retail channels. The most important of these are: Boston, Worcester, Springfield and Pittsfield in Massachusetts; Hartford and New Haven in Connecticut; Providence

1) Prindicple of Industrial Organization by Dexter S. Kimball page 71.

in Rhode Island; Burlington, Rutland, Barre and St. Johnsbury, in Vermont; Portland and Bangor, in Maine. All competing states likewise have these local markets through which merchandise is sold.

Nationally, cotton goods are sold in competition, on the markets of our country's largest cities. In 1920, the Harvard Bureau of Business Research reported the proportion of sales to different outlets as follows: wholesalers, 46%; cutters-up and other manufacturers, 38%; hospitals and unclassified customers, 7%; retailers, 4%; exporters, 5%. 1) New York is the stronghold of both the wholesaler and cutters-up trade, so that the proximity of New England to this market gives it a preference over southern goods.

The standard for economic location relative to distribution areas, is Boston, Massachusetts. This city is distinguished as the world's shoe market. The right to this title is constantly challenged, by the introduction of new distribution methods. Formerly, the field of the boot and wholesaler was national in scope, however, the trend has now changed to a regional basis. Many manufacturers now control their own wholesale outlets which supply the country from Boston, New York, Philadelphia, Cleveland and Chicago. The once popular jobbing house is now out of existence. Chain stores and mail order houses have revolutionized the marketing of shoes and have driven the market out of its former bounds.

Roughly estimated, the manufacturer now distributes about 20 percent of his production through his own chain system; 35 percent flows through the wholesale channel which is owned by

1) Distribution of Textiles, Bulletin No. 56 Cambridge, Mass. '26

the factory; and 45 percent is marketed through the independent wholesaler. In the chain group, there is the manufacturer who has his own retail stores, and the independent organization which purchases most of its shoes from factories. The manufacturing owners have been pioneers in distribution, and have been financially successful. Those of the latter group have not been in the field long enough for us to pass judgment on their success. Boots and shoes are New England's business, so that these changes were expected and preparations were made to meet the changing conditions. Recent surveys in the shoe field disclose our overdevelopment in the industry. This criticism not only applies locally, but embraces every shoe center in the country.

After considering the percentage of distribution through the various outlets, locations can be specifically treated, only by confining the discussion to distribution through the independent wholesaler. The junctures of this market is at Boston, New York and Chicago. In terms of miles the competing districts are favored, but for actual possession of the market, the New England shoe has a reputation that permits a price differential. There is a prosperous chain market now in New England. Lynn, Nashua and Manchester have factories whose entire production is marketed to national chain stores.

In the Electrical Machinery Industry, distribution areas are local. Plants are located to perform the economic functions of catering to neighborhood business. In using an industrial map, one notices that these establishments are sprinkled among the industrial centers so as to absorb the local business. The control of the industry by a number of corporations, practically

eliminates the question of comparative location. There is really no competition between states and districts, but there is a severe struggle for supremacy between companies.

The competing states, in the rubber goods industry, are the rulers in the tire and tube field. The largest market in the world is the automobile region which is contiguous to the Mid-western states. In the replacement tire field, New England can offer some competition on the Boston, New York, and upper New York state markets. In general, rubber footwear follows the marketing scheme of boots and shoes. The chief field for wholesaling these rubber commodities are Boston and New York. New England is in a position, marketwise, to profit by the distance of her western competitors and our goods are as voluminous on both these markets as are those of our opponents in the prosperous automobile mart.

XI. (c)

LABOR SUPPLY AND THE PERCENTAGE OF LABOR COST TO DOLLAR SALES VOLUME.

A suitable labor supply is so absolutely necessary, that without it no industry can hope for success. The prevalence of unemployment in the past few years has obscured the significance of this requirement, still in normal times; success or failure may be decided by this factor. The availability of labor can be gauged by the population of cities. In the present analysis, every industry is over supplied with talent, but all are not necessarily assured of sufficient help when capital again bargains for labor. There is the possibility that the movement toward small town location may prove disastrous, when the attractive city wage comes into vogue again.

Under the particular aspect of cost, the subject of labor becomes paramount. Being a commodity, its price fluctuates within a wide range. When the yearly value of products is divided by the wages paid, the situation becomes acute. Using this method; the U. S. Census of Manufactures for 1925 estimated, that wages accounted for 17 per cent of the value of production for all industries.

The value of products in this same year was made up of the following wage percentages: rubber goods, 15%; textile products, 16%; machinery value, 24%; and leather products, 24%. 1)

On the downward dip of the business cycle, wages are immediately assailed in an effort to cut production costs. Price cutting enters at this stage and business ethics is discarded. The manufacturer soon starts a hasty retreat and is not content until he has reached the rock bottom labor cost. The percent-

1) Plant Location by W. Gerald Holmes, page 166.

age of labor cost to dollar sales volume must be kept within reason. In the textile industry, the competition of silk and rayon drove this proportion out of balance. This was instrumental in drawing many northern mills to the southern cheap labor. There, the standards of living cannot be compared to New England and consequently react on the manufacturer. High labor costs disconcert the industrialist who is engaged in a competitive struggle, while cheap labor is a temporary asset and is insecure under ordinary conditions.

When a particular locality is enjoying such an opportunity, the type of labor is poor and the rate of turnover is so high, that the loss involved neutralizes the low rate advantage. The price of common labor is proportionate to the conditions surrounding a community. When its supply is abundant, quotations remain at a low figure. In purchasing power, the price of labor tends toward a constant. Factories which are now equipped with modern machinery, are in a position to replace skilled help with common labor. By such a practice, the ranks of the skilled craftsman will be thinned and as a result, more recruits will be drafted into the class of common labor. Industrial efficiency will soon reduce the number of the managerial class. However, the alert will find the value of their genius rewarded by higher salaries. The formula for industrial existence now includes intelligent executives, modern machinery and marketing specialists.

XI. (d)

OPERATING EXPENSES; A STATEMENT OF TAXES AND STATE PROHIBITIONS.

Fifty years ago, industry was unrestricted by law from state to state. Child labor, workingmen's compensation, taxes, both property and income and regulated working hours were unknown. In those sections where industry progressed, various legislative acts were passed for the common good. At the same time, less industrious districts endeavored to attract establishments, by offering the inducements of tax exemption and less rigid labor requirements. There is a lack of uniformity throughout the country in factory legislation. Time and education, may eventually remedy this condition. The southern textile mills, have popularized cheap labor, because of its working day and cheap wage scale. Massachusetts, Connecticut, Virginia and Alabama now confine the childs working day to eight hours; Georgia, South Carolina and Rhode Island allow a ten hour day; New Hampshire adds a quarter of an hour to this allowance; and in North Carolina the day is stretched to eleven hours. The weekly rates likewise vary from forty-four hours in Massachusetts and Virginia, to forty-eight hours in Connecticut and Alabama. In Maine, New Hampshire and Rhode Island the allowance reaches fifty-four. Finally, the peak is reached in South Carolina with its fifty-five hour week. Massachusetts stands out as a staunch supporter of proper working conditions, yet this same interest has wrought havoc in our textile industry. Seasonality plays so important a part in textile production schedules, that the southern mills can profit by the longer working day. Furthermore, women who constitute the majority of textile employees, are unrestricted in night work, and children can

remain in the factories late hours. To show the variation of labor legislation, in the states included in this study, the following table is presented:

Summary of State Regulations Pertaining to Hours of Women and Children Work. 1)

		Maximum Hours		Night Work Prohibited	
		Day	Week		
Massachusetts		9	48	10 P.M.	6 A.M.
Rhode Island		10	54		
Connecticut		10	55	10 P.M.	6 A.M.
New Hampshire		10¼	54 a)		
Vermont		10¼	56		
Maine		9	54		
North Carolina	b)	11	60		
South Carolina	b)	10	60		
Georgia	b)	10	60		
Alabama		No restrictions			
New York		8	48	10 P.M.	6 A.M.
New Jersey		10	54	10 P.M.	6 A.M.
Pennsylvania		10	54	10 P.M.	6 A.M.
Ohio		9	50		
Illinois		10	70		
Missouri		9	54		

a) If any female works at any time between the hours of 8 P.M. and 6 A.M. on more than two nights a week, not more than 8 hours of work are permitted in any 24 hours or more than 48 hours of work in any week.

b) Textile industry only.

At present, workingmen's compensation is compulsory in all states with the exception of New York, Illinois, Ohio, South Carolina and Mississippi.

Tax rates have increased by leaps and bounds in many industrial centers. This was the natural result of innumerable industries crowding into industrial centers.

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1) Bulletin of the women's Bureau, United States Dept. of Labor, Government Printing Office, 1927.

With income curtailed, the manufacturer is depressed at the sight of a constant tax charge appearing on his books. This item, coupled with some others has influenced the relocation of many plants. Following the precedent of other states, a few New England localities are offering tax exemption and free rent to interest the manufacturer. The following tax rate table, portrays the situation as of 1928:

Comparative Tax Rates (1928) 1)

	Tax Rate Per Thousand of Assessed Valuation	*Final Re-adjusted Tax Rate
Boston, Mass.	28.80	25.92
St. Louis, Mo.	25.90	19.43
New York, N.Y.	26.56	23.88
Lynn, Mass.	28.40	28.40
Brockton, Mass.	34.80	27.84
Haverhill, Mass.	30.00	30.00
Manchester, N.H.	27.50	27.50
Lawrence, Mass.	26.40	26.40
Lowell, Mass.	28.40	28.40
New Bedford, Mass.	29.20	23.36
Fall River, Mass.	40.80	34.60
Newark, N.J.	38.30	38.30
Charlotte, S.C.	98.50	29.37
Columbus, Ga.	31.00	20.77
Providence, R.I.	23.50	23.50
Columbus, Ohio	21.80	16.35
Passaic, N.J.	39.29	39.29
Atlanta, Ga.	31.09	24.80
Durham, N.C.	25.00	15.00

* Corrected for difference in legal basis of assessment and for variations from uniform use of full value in order to make figures comparable.

B. B. Gassett recently remarks that the trend of taxes has reversed in the textile industry. In the South, taxes are now increasing, while New England is decreasing them. The cost of government in Massachusetts for the past fifteen years, has been several hundred per cent less than in the South.

1) Plant Location by W. Gerald Holmes, page 132.
2) Textile World 79: 266-268 June 20, 1931

XI. (e)

IS THE MACHINERY NEW OR OLD?

At the end of a definite operating period, every concern closes its books in order to ascertain the income and expenses. The former is determined by sales; the latter by purchases and operations. To produce income, industry must satisfy the public as to quality, price, style and assortment. Competition has developed a defensive market, so that commodities having equal qualification must stand the test of price. Even in a falling market, the ability to manufacture at reduced market values has increased the income of many producers. There is, however, a definite range with which any going concern can bid for business. The survivors are those best equipped to manufacture at a low cost, and by so doing, widen the range within which price may fluctuate. Modern machinery, standard operating methods, and general efficiency are means by which costs are reduced to a minimum. The reputation of old establishments have depreciated with the introduction of standard production methods, so that a name added to a product will not allow it a great margin of freedom in competition.

Conservativeness in business is an inherent characteristic of New England. The financial independence of our early industrialists, may account for our present passiveness. Now, the standard business procedure seems to be, to completely eliminate risk from business. To illustrate, many mid-western plants have recently installed equipment, which will produce finished values at a cost of six cents each. This same machinery, continually, meets resistance in New England, where the same operation, by obsolete machinery, carries a production cost of about thirty cents. Again, mid-western plants are using a high speed steel

that has revolutionized production costs. Those familiar with tools readily admit that a steel which can cut 32 inches of marble per minute, must bring the lowest possible manufacturing costs. To the unfamiliar, a comparison will be more convincing. To turn or shave a particular piece of stock, with the tools generally used, requires two days. The latest tool steel will shave an equal amount of stock in three or four hours. The conservative New Englander objects to introducing this equipment, on the grounds that his factory will be thrown into confusion, that prices will be out of line with his present rates, wage scales will be misaligned and his obsolete machinery will need overhauling. How can competition be met when we are unwilling to assume the same risk as other localities?

Modern equipment is readily utilized in the boot and shoe industry. Passiveness is non-existent due to conditions peculiar in this field. Shoe factories throughout the country, merely lease the plant equipment and consequently the shoe machinery builder initiates the progressiveness.

Statistics show that the South became an important New England competitor in textiles about 1900 and became our superior long before we credited that district with the honor. In the North, there was a sudden business expansion even before the "World War". The ease with which capital was drawn to this textile region caused the mills to bulge with the enormous purchases of machinery. On the other hand, southern manufacture was being concentrated on reproducing standard fabrics whose sales were smoothly increasing. The substitution of silk and rayon cut heavily into our cotton profit, but style delivered the critical

blow from which New England has not recovered. So much finance has been invested in our overdeveloped factories, that it was impossible to make the change to more modern equipment. At such a crucial moment, the South, which had sufficiently proved its manufacturing ability to the financial world, found the monetary stream re-directed to their region. Now, textile machinery was added to meet the market demand. It is not amazing that Fall River, Massachusetts, one of our big textile centers, lost 49 percent of its mills in the past ten years; when viewed under these circumstances. Reorganization has gone on in the North, in the past few years, and many dead limbs have been cut from the industrial tree. Now that wages have been cut, and obsolete machinery junked, "New England can produce more cheaply than the South." 1)

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1) Textile World by B. B. Gassett, pages 266-268 June 20, 1931.

XI. (f)

LOCAL LABOR CONDITIONS; SKILLED HELP; WAGE SCALE.

The labor conditions of a community are either an asset or a liability. As long as harmony reigns, industry and the locality progress, but when indifference and hostility predominate, the future of both are at stake. In the downward trend of the business cycle capital belittles labor. Then, there is a reciprocal action as business leads toward prosperity.

The history of the textile industry is replete with the actions and counter attacks of labor. The power of the employer was expensively demonstrated in the famous textile strike at Lawrence, Massachusetts, when recourse to martial law was necessary, in order to stave off disaster. This upheaval was later re-enacted in the cities of Lowell, Fall River and New Bedford.

In the leather industry, the cause of labor was bitterly supported in Lynn. The contagion soon spread to Haverhill and Brockton. In any New England city this factor is very sensitive and as such demands cautious treatment. The skirmishes of both the textile and leather industries have left a discontented impression with the manufacturer. Migration within New England, is chiefly attributable to this circumstance in shoe industry. Unionism, was well supported in the North until recently, when the "open shop" grew into favor. Whether this is a temporary condition or not, is a matter of conjecture, for it is reasonable to believe that the spark of Unionism has not yet become ashes.

The leading industries of New England are natives of this region, consequently, the labor market of skilled help

is well supplied. Neither the West nor the South are as favorably situated in the matter. It is only recently, that expansion has gone on in the boot and shoe industry in the West, and it is not improbable, that under normal conditions a deficit of skilled help may appear. The South openly admits of possible labor shortage, when the mills offer such donations as homes, free light, coal at cost and recreational attractions.

The wage scale of common labor varied considerably throughout the country, in 1928. The approximate hourly rates were 20 cents in Georgia and South Carolina, 25 cents in Alabama and North Carolina, 35 cents in Missouri, 40 cents in Maine and New Hampshire, 45 cents in Illinois and Pennsylvania and 55 cents in Massachusetts and New York.

The average weekly earnings in the New England textile industry was $19.12 for 1927, whereas the average for the South was $12.94. The seriousness of this result on production cost is startling, for herein is a 47 per cent difference. Although averages always give weight to extremes, nevertheless, it is safe to assert that there is a wide margin between the wages in these two districts. In a measure, the cost of living reduces this variation. In comparing the cost of living in Greenville and Charlotte, South Carolina, with Lawrence and Fall River, Massachusetts; in 1920, it was found that both southern cities were higher.1)

By 1929 the southern labor began to show dissatisfaction and launched its first offensive for better conditions. In that year, figures showed that the female weaver in Mass-

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1) Harvard Business Review, April 1930--By Brasdas Mitchell.

achusetts was receiving 20 per cent less than in 1920, while those of Georgia, North and South Carolina respectively were getting 32, 36, and 41 per cent less. 2). Within the past three years, the South has encountered more desperate labor conflicts than those experienced in our mill towns. The South will enjoy the advantage of cheap labor for some time to come, but when this industry discontinues inducements, and standards of living are raised, they may find that cheap labor is expensive. The boot and shoe industry has not been particularly damaged by the labor uprisings in this section. Whatever loss is involved is purely local, for there has been no western migration in this industry. Some communities have suffered because of these upheavals, while other New England towns have benefited. Many factories in Lynn, Haverhill and Brockton have migrated or discontinued business, but the new home of the going concerns can be found in Lowell, Manchester and many small towns in Maine. In the West, the competing states have been immune from this affliction and have temporarily profited by our disorder. However, this is all history now, and the re-location of this industry within our borders is accomplished. The manufacturer is now satisfied and since reorganization has straightened the matter, New England is ready for the keenest of competition.

2). Labor Review, Oct. 1930 by E. B. Dietrich

XI. (g)

CLIMATE, AS IT AFFECTS PRODUCTION AND MATERIAL.

After struggling with such complicated problems as production, distribution, and labor, the subject of climate may appear trivial. Notwithstanding, this topic must be discussed for it bears a relation to net profit and hence is important. In general, climate has a definite affect upon both human beings and production. Either extreme in temperature increases the operating expenses of a factory. Intense heat reduces the efficiency of the worker, while the opposite extreme causes a high fuel cost. In the Cotton and Rayon industries, humidity and temperature are vital requirements. The cities of Fall River and New Bedford emphasize the value of climate to production. In this territory, the damp air so affects the cotton fiber that production is facilitated, and quality improved. Furthermore, many manufacturing processes demand a relatively constant temperature, which cannot be found in every location. Science **indeed**, has brought assistance to these industries by duplicating natural conditions. Now, by means of fans, sprinklers, refrigerators, humidifiers, electric ovens and ventillating systems, industry is supplied with favorable climate. All this modern equipment is expensive in purchase and maintenance, so that the operating account must be affected. The real advantage of natural climate is, that nature furnishes a free need and thus advances income by decreasing expenses.

Closely associated with climate is recreation. The skillful mixture of enjoyment and work promotes an efficient worker. The large corporation realizes this and sponsers any movement that will moderate these two elements.

XI. (h)

TRANSPORTATION, INCLUDING SERVICE, RATES AND CONVENIENCE.

Because short order buying has captivated the American merchandiser, transportation rates and service have become paramount. The trade wind now blows in the direction of those localities best adopted for these facilities. In New England economic water transportation is offered by both rivers and the sea. Strategically lining off the southern portion of New England are the Thames, Housatonic and Connecticut rivers. In Massachusetts, the Blackstone, Taunton, Charles and Merrimac rivers flow into the Atlantic. The Saco, Androscoggin, Kennebec, and Penobscot rivers in Maine empty into the sea. Inland Maine is serviced by the St. John's and Aroostook rivers. All eastern New England borders on the Atlantic. Located equidistant along the coast, are the large harbors of Boston and Portland. These act as resevoirs for the water traffic that ply the rivers. The entire area of the Northeast is covered with a net work of railroads, all of which terminate in Boston. The Boston and Maine; New York, New Haven and Hartford, and Boston and Albany railroads have terminals in Boston from which freight and passenger service is furnished to the South, the West, and Canada. The number of railroads and mileage operated is presented on the following page:

MILEAGE OF NEW ENGLAND RAILROADS

ROAD	MILES OF ROAD	TOTAL MILES OF ALL TRADE
New York, New Haven and Hartford	2004.13	4940.54
Central New England Railway	295.87	534.13
TOTAL	2300.00	5474.67
Boston and Albany Railroad (New York Central, Lessee)	393.93	1142.69
Boston and Maine Railroad	2287.36	4825.21
Boston, Revere Beach and Lynn Railroad	13.12	34.48
Central Vermont Railway	458.09	619.19
Rutland Railroad	415.11	547.77
Maine Central Railroad	1215.33	1678.24
Bangor and Aroostook Railroad	625.82	882.50
Canadian Pacific Lines in Maine	233.70	282.97
Atlantic and St. Lawrence Railroad (Grand Trunk Railway Co., Lessee)	166.78	259.49
TOTAL	8109.24	15747.21

Taken from the report of the Federal and State Commissions for 1921.

In this period of production budgets and standard methods, loss of machine time by breakdown, must be minimized. The time element, which once worked such hardships against our machine and tool manufacturers who were competing in Mid-western markets, has now been eliminated by air service. Not only can small parts be shipped without delay, but the mileage is reduced, as is shown in the table below.

AIRWAY FROM BOSTON

New York	188	Miles
Philadelphia	268	"
Baltimore	358	"
Pittsburg	478	"
Cleveland	550	"
Atlanta	849	"
St. Louis	1036	"
New Orleans	1359	"

Trucking, because of its service and convenience, is now a popular means of transportation. Now, the small town is serviced in the same manner as is the large city. Competition has forced greater service, so that each railroad has inaugurated a fleet of trucks to combat some of the local trucking. With the aid of good highways, complete service is rendered throughout the year.

The irregularity of New England topography produces an economic waste in transportation, which will never be eliminated. Profits come from production, not from transportation, for the latter incurs expense. The time lost and the expense involved in transporting over this hilly area, is portrayed by the altitude table of the New England Weather Bureau.

ALTITUDES IN FEET

MASSACHUSETTS

Adams	799
North Adams	706
Pittsfield	1013
Greenfield	204
Northampton	124
East Hampton	169
Holyoke	115
Westfield	149
Chicopee	84
Springfield	83
Gardner	1030
Fitchburg	438
Clinton	214
Marlboro	375
Worcester	475
Webster	440
Framingham	199
New Bedford	17
Lowell	101
Lawrence	83
Haverhill	35
Amesbury	26
Newburyport	39
Salem	10
Lynn	26
Everett	12
Cambridge	22
Newton	33
Waltham	51
Somerville	13
Brockton	128
Plymouth	38
Taunton	54
Attleboro	137
Fall River	42

MAINE

Bangor	47
Auburn	183
Lewiston	199
Bath	7
Portland	26
Biddeford	75

VERMONT

Barre	484
Rutland	562

RHODE ISLAND

Woonsocket	162
Providence	11

ALTITUDES IN FEET, CONTINUED

CONNECTICUT	
Danbury	371
Bristol	332
Waterbury	260
Ansonia	31
Bridgeport	9
Norwalk	39
Stamford	34
Hartford	38
New Britain	199
Naugatuck	194
Meriden	150
New Haven	10
Norwich	33
New London	9

NEW HAMPSHIRE	
Berlin	1013
Laconia	507
Concord	244
Keene	487
Manchester	246
Nashua	150
Dover	77
Portsmouth	14

(1)

Altitudes taken at either railroad stations or weather bureaus.

(1) Dictionary of Altitudes, Government Printing Office 1906

XI. (i)

POWER, AS ITS COST REFLECTS ON PRICE.

with the increasing electrification of industries in New England, the problem of supplying continual power for production has become prominent. At one time, industrial sites were selected because of their water power value alone. All other factors were made to fit in with this asset. Today the opposite is true, for power is brought in by transmission lines to meet more important factors.

The question of power cost may be insignificant in some industries, but in 1923 the subject was sufficiently urgent to warrant an investigation of probable sources of cheap power in New England, by the Associated Industries of Massachusetts. Below, the power requirements of the five leading industries are shown:

Power Requirements by Industries, Expressed in Terms of Installed Horsepower:
1922

COTTON GOODS	
By Fuel	336028
By Water	63913
Purchased	136571
WOOLEN AND WORSTED GOODS (INCLUDING FELT GOODS).	
By Fuel	144000
By Water	20000
Purchased	35000
BOOTS AND SHOES (INCLUDING CUT STOCK AND FINDINGS).	
By Fuel	17804
By Water	235
Purchased	32691
RUBBER GOODS	
By Fuel	14566
By Water	275
Purchased	28113
ELECTRICAL MACHINERY	
By Fuel	30305
By Water	145
Purchased	9540

Report to the Associated Industries of Massachusetts of its Power Investigating Committee, page 56.

Power is an operating expense and therefore reflects in prices. It is significant, that our amount should fall in line with the expense of competing states. This investigation was primarily sponsored to find a solution for this variation.

Fuel and power are so related that a discussion usually includes both. Coal is used extensively in the generation of power. New England is entirely removed from this raw material, which is produced in thirty-one states. Hence, complete importation is demanded. Natural and artificial gas, oil, and water are the remaining sources of power production. In the case of artificial gas, the defense of competing states remains strong, for coal must be imported for this process. Artificial gas is highly rated in efficiency and economy. Twenty-one states are supplied by this source of fuel and power. No New England state is included in this number. The near future possibilities are extremely remote. Oil is advantageously used for heat and power. Massachusetts and Rhode Island operate some refineries, but the output is about three per cent of the country's total. These various producers of steam and electrical energy are located in the South, Mid-west and Middle Atlantic states.

Water power formerly was the all important medium of supplying power, but this obligation is now assumed by the steam plant. There is a sufficiency of developed water powers in New England, but the ultimate cost is defeated by steam. Our undeveloped powers are situated in such inaccessible places, that the adventure would be unprofitable until more industries grow within their range. Hydroelectric

transmission from Niagara and St. Lawrence should benefit our industries. At the present time, electrical engineers are not optimistic about the project because of rates and transmission difficulties.

Finally, many states have a fuel and power advantage over New England. This particular factor is not so disturbing, when it is realized that according to the 1925 Census of Manufactures, the cost of power amounted to only two per cent of the value of products for that year.

XI. (i)

BANKING FACILITIES.

With the advent of the corporation, finance was called upon to furnish the necessary funds to enable business expansion. The value of this assistance, can be approximated by considering the wealth represented by a few of the larger corporations. Had not such credit been possible, it is unlikely that any individual concern could have accumulated sufficient funds to finance such gigantic projects. Even in their own state, these larger organizations could not have gathered sufficient financial strength to assure successful operations. Not only did money flow from every part of this country, but also from the entire world to establish these corporations. Banking was the medium through which this was made possible. Even before the land was purchased for a factory site, the matter of finances had to be settled. The banker is the financial doctor of the community. His position requires keen knowledge of present and possible conditions.

Bank credit, either in the form of bonds, stocks, mortgages, or money, is the foundation upon which industries are built. As soon as the wheels of industry start to turn, another service is demanded, namely; payroll and deposit accomodation. Commercial paper of all description then starts to flow into the enterprise, and the bank must function to exchange or collect this. Banking is most important in the selection of an industrial location. Credit, which constitutes so much of the exchange medium in business, is based on the knowledge of a risk. Not only is this service

a source of assistance to the employer in his sales, but it enables the bank to render him financial aid more quickly, because of the close contact with borrowing concerns.

The number of banks and the amount of deposits are a good criterion of the success of a community and the type of resident labor. Were we to judge banking facilities solely by the amount of exchange, then we would find that in 1920, the clearings through Boston were very large, being exceeded only by New York, Chicago and Philadelphia. The following table presents the financial strength of New England banks in 1927.1)

	Number of Banks	Loans and Discounts	Aggregate Resources	Individual Deposits
		(Thousands omitted)		
Connecticut	250	762,954	1,320,034	1,100,935
Maine	144	196,042	466,694	381,030
Massachusetts	442	2,721,665	4,911,842	4,073,262
New Hampshire	123	139,983	304,088	253,295
Rhode Island	37	274,314	571,441	493,105
Vermont	105	155,001	261,716	221,758
Total New England	1,101	4,249,959	7,835,815	6,523,385
Total United States	27,061	37,270,378	68,132,558	51,132,554

1) Commercial Structure of New England. Page 253.

To offer a more recent picture of the banking situation, the following table is presented:

BANKS IN NEW ENGLAND BY STATES 1)

(All figures, except number of banks, in millions)

	Number of Reporting Banks		Loans including rediscounts and overdrafts		Deposits excluding bank deposits		Rediscounts and bills payable	
	1928	1929	1928	1929	1928	1929	1928	1929
Maine	136	133	214	230	396	396	8	10
N. H.	124	123	149	157	275	282	2	4
Vermont	105	104	158	158	242	235	3	7
Mass.	448	450	2844	3007	3871	3932	60	43
Rhode Island	34	33	290	310	505	499	6	2
Conn.	235	237	764	806	1214	1232	14	16
New England	1082	1080	4421	4671	6504	6578	97	83

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1) Statistical Abstract of United States, December 31, 1930 Page 264.

CHAPTER XII. (a)

THE LOCATION OF FOREIGN MARKETS.

In the past, the foreign market was the outlet for a volume of American goods. Temporarily, tariff controversies have considerably reduced the value of this source sales. England, Germany, France, Italy, and Russia are still European customers of American merchandise. The remainder of the foreign market includes Canada, Cuba, South America, China and Japan. Every one of these countries are heavy buyers of American machinery and will continue to be so for some years to come. Such purchases gradually reduce the foreign demand for our finished goods. Standardized machinery and foreign labor are two forces which will, eventually, reduce our foreign sales. Many American corporations have realized the conditions surrounding foreign markets and have organized to meet the situation. Now, by means of branch plants in foreign countries, the American producer is able to avoid the lash of tariffs, and yet employ foreign labor.

The boot and shoe foreign field stands to receive a permanent loss of business, due to the fact that the American manufacturers of shoe machinery are freely distributing machinery through their foreign branches. The Cuban and Canadian markets, which formerly absorbed great supplies of our shoes, have dwindled because of adverse tariffs and machinery. However, the reputation of the American shoe for style, appearance and quality is deeply impressed on the shoe markets of the world, and consequently the foreign demand for a particular shoe should continue, for the combination of these three factors cannot be duplicated by machinery.

At the moment, cotton and woolen foreign sales are off.

Like shoes, New England cotton and woolen goods will always be sought by the foreigner because of a customer's preference. In approaching the subject of location with reference to foreign markets, the foreign market is confined to Europe, to the Orient, and to North and South America.

XII. (b)

DISTANCE FROM BOSTON TO FOREIGN MARKETS.

Service and economy have been so woven into the merchandising policy of American manufacture that they constitute the outstanding design. Distance includes both time and money. Whatever improvement is made to diminish this element of space, means an increase in service and a possible increase in the volume of business. By affecting such an economy, smaller manufacturing cost results, and the spread between cost and selling price is lengthened. Since this is so, it necessarily follows that a corporation can more freely bid in competitive markets. The location of Boston is such, that the European, South American, and Canal Zone markets can be reached more quickly than from more flourishing seaports. Using Liverpool, Rio de Janeiro and Panama Canal, as the standard distance of important foreign markets, the following table reports Boston's offer of shorter routes:

From	Mileage 1 To Liverpool	Boston's Advantage
Boston	2820	---
New York	3010	190
Philadelphia	3160	340
Baltimore	3324	504
New Orleans	4553	1733
Galveston	4730	1910

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1 New England and Nation's Business Page 11-198

From	To Rio de Janeiro	Boston's Advantage
Boston	4748	---
New York	4778	30
Philadelphia	4828	80
Baltimore	4840	92
New Orleans	5244	480
Galveston	5344	596
San Francisco	7638	2890

From	To Panama Canal	Boston's Advantage
Boston	4077	---
Los Angeles	2935	858
San Francisco	3302	1225
Vancouver	4019	1942

Here, attention is called to the fact that the products of the five leading New England industries, and those of competing states, must be shipped from the ports in this chart. All our competition comes from the Middle Atlantic, Southern and Central States. New England industries are practically located on the water front, so that transportation charges for foreign shipments are the smallest in the country. In the Southern States, the goods must be freighted to New York, Philadelphia or Baltimore. Not only have the Central States heavy transportation expense in foreign export trade, but also in domestic trade. In supplying the West Coast, it is considered more economical to ship East by rail, and then by water, to the Pacific coast. Rail rates are so high to the Pacific coast that goods flow east for the low rate water transportation. Evidertally, this is a vulnerable

spot for industries of that community, and with manufacture spreading its wings, this waste may bring a loss in competing with future manufacture on the coast. Apart from New England shipments, the port of Boston is the natural outlet for our most important exports.

The following chart shows the distance from the Atlantic seaboard to Liverpool. The cities used as points of origin are so selected because of the nature of their export trade:

	1)		Miles
From Detroit via	Boston---------	to Liverpool	4084
" " "	New York-------	" "	4228
" " "	Philadelphia---	" "	4418
" " "	Baltimore------	" "	4551
From Chicago via	Boston---------	to Liverpool	4356
" " "	New York-------	" "	4492
" " "	Philadelphia---	" "	4579
" " "	Baltimore------	" "	4799
From St. Paul "	Boston---------	to Liverpool	4689
" " " "	New York-------	" "	4806
" " " "	Philadelphia---	" "	4976
" " " "	Baltimore------	" "	5105
From Kansas City via	Boston---------	to Liverpool	4799
" " "	New York-------	" "	4915
" " "	Philadelphia---	" "	5002
" " "	Baltimore------	" "	5102
From Saint Louis via	Boston---------	to Liverpool	4671
" " "	New York-------	" "	4636

1) Boston Chamber of Commerce

XII. (c)

SHIPPING FACILITIES.

Harbors are well distributed along the New England coast to furnish economical intercoastal and foreign transportation services. Portland, Maine, possesses one of the world's finest harbors. Any ship in the world can dock in the deep waters of this port. Prospectively, Portland may become a terminal for foreign export shipping, for there is a directness from the automobile centers to this city, and a shorter European voyage. Again, Portland is merely a distance of thirty miles to the open sea. Sailing southward along the coast, another large harbor is seen at Portsmouth, New Hampshire. The coast of Massachusetts is indented with harbors at Newburyport, Gloucester, Beverly, Salem, Lynn, Boston, and New Bedford. Rhode Island is serviced through the port of Providence, and New London furnishes accomodation in south eastern Connecticut. Navigable rivers connect many of these terminals, so that shipping costs are reduced. This is true of the Connecticut River, which carries freight from the industrial center of Hartford to New London and New York. Water born traffic moves along the Thames to Norwich, Connecticut. Cambridge is connected with Boston by means of the Charles River. The shoe center of Haverhill is located on the Merrimac, which is a water way to Newburyport and Boston. In Maine, the Kennebec is an outlet for the city of Augusta, and Bangor is reached by the Penobscot. The foreign commerce of these interrelated harbors eventually flows into Boston. This port is situated coastwise in the industrial section of Massachusetts, and yet at the mid point between Maine and Connecticut. The sailing time between Boston and the open

sea is only one hour. "Within the 140 miles of waterfront which surrounds this port there are 40 miles of berth space. Steamship and railroad facilities are combined at the Boston-Maine, New York, New Haven and Hartford and Boston and Albany piers".1) This gives direct rail connection with every large port in the world.

The world's largest pier, which is a possession of this port, offers complete freight and passenger accomodation. With more than 60 steamship lines, visiting this port, service is maintained with great efficiency. Lastly, the largest dry dock in the world, which facilitates ship repairs, is located in the harbor.

At the present time the Boston-Dorchester Tunnel Company of Boston, Massachusetts, is petitioning the legislature of Massachusetts for a permit to construct terminal facilities in Boston harbor that will be the largest in the world. Among industrial engineers the standard example of economic location is the Bush Terminal in New York. If this gigantic undertaking is accomplished, tunnel facilities will bring the railroads under the harbor to the warehouses and docks, which will be located nearer to the high seas than any Atlantic ports. Then, shipping service will be increased, and with the latest improvements in handling, Boston should, by its natural right, become the greatest port in America.

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1) Massachusetts Commissions on Stateways & Public Lands (1918)

CHAPTER XIII.

CONCLUSION.

Since location standards for the most part should be rigid, it is obvious that no one concern could possess all these qualifications. The combination of the most important requirements is not only possible, but is the actual procedure in deciding upon a site. This opinion is not submitted as a panacea for business failures, but is a corrective suggestion that will ameliorate such losses. The fundamentals of economics must always be observed in connection with the principals of location, for ideal conditions can be defeated because of factors which are foreign to location. Any growing industry eventually reaches the period of diminishing returns. This is true of the English textile production as well as this same industry in New England. There are certain advantages to industrial concentration, but in many instances returns diminish before the defects are noticed.

From our analysis, it still remains true that our location is satisfactory for all our leading industries. 1) The over expansion of concentration within the textile field has been sufficiently broken, as is seen from conditions in Fall River in 1929. In that year, the number of spindles fell from 3,405,375 to 2,000,000. The number of looms fell from 79,074 to 15,000. With such reductions, 13,000 employees were discharged. Such concentration does not exist in the Southern States. To picture the southern situation, the two largest centers are shown for 1929:

	Number of Spindles	Number of Looms
Columbus, Georgia	484,496	8,251
Greenville, South Carolina	633,860	16,043

1) Commercial and Financial Chronicle. December 28, 1929.

If all these failed in 10 years, the southeast would be eliminated; but Fall River, alone, lost the total of both these southern sections in one year.

The distribution of shoes through the medium of chain systems has materially helped that industry in New England. The problem of a shifting center of population has now been handed on to the Chain System. Further, the rubber goods industry possesses a sufficient number of important requirements to characterize its location as good. The foreign market for this commodity offers a lucrative field in the near future.

The nearness of Boston to both foreign and domestic market is not a complete advantage. Even though a day may be saved by shipping through this port, the rates are the same from European ports to all Atlantic seaboard ports. Time is saved, but better European service out of New York, will continue to attract commerce to that port. However, if the proposed improvement in Boston's harbor facilities materialize, sufficient financial weight can then bring rate adjustments which will improve our foreign shipments.

Finally, New England has an intangible asset of knowledge of current business conditions. This is seen from the progressive plans of the New England manufactures for 1932. 1) Out of 300 reporting concerns 240 will aim to cut production costs; 116 plan on installing new machinery; 102 propose to use new processes; and 86 intend to improve plant layout.

1) Where New England Will Look for Profit in 1932
Business Week--December, 1931.

TEXTILE FORECASTS

by

NEW ENGLAND TELEPHONE AND TELEGRAPH CO.

1929-1950

"Varying manufacturing conditions and costs exist from Maine to Texas. Principal factors in favor of the South are a supply of low-priced, native-white labor and almost complete freedom from restrictive legislation. Other factors are nearness to raw material, lower taxes and tax concessions, lower power costs, generally modern mills and machinery, and local encouragement. Advantages to manufacturers in New England consist of an experienced and skilled labor supply and management, nearness to New York and an extensive market, and ideal manufacturing climate, quality and condition of the water supply, established reputation and trade channels, financial resources of the stronger mills, and idle mill properties at low cost".

"The future probability is that present evident advantages of the South will be greatly reduced. It is uncertain how long this equalizing process will take, but the prospects are that a major part of it will occur by 1936. As living costs and effectiveness of labor are less in the South than in the North, there will always be a difference in the wage level, but the amount of this differential will decline. Taxes in the South will be higher, hours of labor reduced, and night operation curtailed. A number of cotton manufacturers here are operating branch factories in the South, but not from choice. With anything like equal manufacturing conditions, preference

will be given to New England. Cotton manufacturing conditions should, therefore, be more favorable for this section during the period 1936-1950".

Page 26.

BOOTS AND SHOES (OTHER THAN RUBBER)

FORECASTS BY

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY

1929-1950

"The Boot and Shoe Industry is still one of the territory's largest and most influential manufacturing activities, despite its declining tendency over a considerable period prior to 1925. Nationally, this section has lost some of its prominence in this industry as a result of local conditions and increased manufacturing capacity and success in the Middle West and New York. This latter factor plus abnormal expansion during the war, and a decline in the per capita consumption of footwear since 1923, has produced about a 25 % surplus in manufacturing capacity of the entire industry. Increased production will have to depend on population growth, as prospects do not favor a return to the former level of per capita footwear consumption during the survey period. A large net export business would benefit production, but only a small increase can be hoped for from this source".

"A natural tendency exists for the Boot and Shoe Industry to spread out and follow the movement which will tend to hold here a large percentage of the industry. The territory is within reach of a large section of the entire domestic market, particularly that of New York and is conveniently situated for water shipments to coastal states and foreign countries".

"Labor and management are skilled and experienced and manufacturers of leathers, textiles, cut stock and findings, rubber heels, shoe machinery, lasts and patterns are located within the territory. Boston is the largest

trading center for shoes and leather, and this section has an established reputation for quality and style products".

"Shoe manufacturers in Massachusetts, however, must contend with a high degree of unionism which involves labor disputes, high wage rates and low output per wage earner. Transportation costs and delivery time to interior points, taxes and hours of labor are minor disadvantages, but they play a part in the keen competition which this territory faces from Illinois, Missouri, New York, Ohio, Pennsylvania and Wisconsin. The Middle West is favored by an extensive local market and a growing leather industry, while New York benefits from its large immediate market".

"The territory will always be a factor in the Boot and Shoe Industry, but a further decline in its percentage of the Country's shoe workers is probable, although at a much slower rate than in the past. Wage earners will increase to some extent by 1950, but will not approach the 1923 total. Production of footwear will expand, but it will be accompanied by a higher output per wage earner, as a result of more efficient operation and management, improvements in labor saving machinery and more full time operation. Massachusetts will specialize even more on fine grade and novelty shoes, and Maine and New Hampshire on medium grade, as a result of certain conditions. Com-

petition from other sections will increase and manufacturers here who do not improve merchandising practices, lower production costs and conform to changing business conditions will be gradually eliminated. A period of consolidation to combat competition is quite probable".

"Considerable change in factory location is expected during the first part of the survey period as the tendency is away from unionized centers. Maine and New Hampshire Industrial Regions will have a larger number and percentage of wage earners due to lower production costs, freedom from labor troubles and progressive manufacturers. The Eastern Massachusetts Industrial Region, with about 2/3 of the territory's shoe workers in Essex, Suffolk, Plymouth, Suffolk, and Middlesex Counties, will continue as the center of shoe manufacture in this section, but will not increase its wage earners to any extent. Brockton, Haverhill, and Lynn have probably permanently passed their peak as employers of wage earners, but Boston should continue its growth as a result of favorable labor, raw materials and transportation conditions."

WOOL AND WORSTED INDUSTRIES FORECASTS

by

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY.

1929-1950

"The Woolen and Worsted goods industry will remain firmly established in the North. This territory will retain leadership and increase its wage earners in Wool Manufactures during the survey period. There is no reason to anticipate much increase until after 1935, when considerable manufacturing slack will have been absorbed by population growth, and a number of unprofitable mills will have been eliminated or consolidated. Between 1936 and 1950, there should be a gradual growth depending on the style factor and the increase in population."

RUBBER GOODS FORECASTS

by

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY.

1929-1950

"The location of New England is favorable for the manufacture of rubber products. It has ready access to the ports of Boston and New York for imports of crude rubber and for foreign and domestic shipments of finished products. Other raw materials such as textile fabrics and chemicals are readily available. The concentrated population in the East provides a large market. Climate conditions favor the local footwear market, and the cities of New York, Syracuse, and Boston are large tire replacement centers. Labor is skilled and intelligent, capital is available, and the group has acquired momentum and a reputation. The most significant handicap is the time and cost of distribution to interior markets of the country."

Page 44.

MACHINERY FORECASTS

by

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY.

1929-1950

"Plant location is increasingly dependent on such factors as markets, raw materials, labor and transportation. Manufacturers here are favorably located to large eastern markets, and can reach domestic seaboard markets and those in foreign countries at low water rates through the ports of Boston and New York. Materials such as pig iron, iron and steel scrap, wire, copper, brass, limestone, sand and lumber are available within New England, but sheet and rolled iron and steel products, iron ore and coal must be purchased outside. Labor is skilled and talented. Transportation facilities are adequate, but freight costs on certain raw materials and finished products are a disadvantage Capital resources are large, and the industries have an established position. Taxes, wage rates and power costs in the principal manufacturing areas appear relatively higher than in competing sections. Time of delivery and service to interior points is a disadvantage which is partly overcome by location of branch offices and warehouses at distributing points."

Page 32.

THE SHOE INDUSTRY OF NEW ENGLAND

BOSTON CHAMBER OF COMMERCE. 1925

It must be remembered that the shoe manufacturing industry of the United States is over-developed, if domestic consumption alone is taken into account.

The production of shoes in the United States during 1923 averaged 3 1/6 pairs per person. The shoe factories of the country have a capacity for turning out nearly 80 % more than this actual output.

Over-development in all industries was greatly augmented by the war demand, followed by the abnormal inflation of 1919. For many years, however, individual plants have been increasing their capacity and making additions which have totaled far in excess of the country's requirements. It is easier to start a shoe factory than a plant in almost any other industry because the machinery may be leased. Comparatively little initial investment is required.

A factor which has entered to some degree into the present over-development is decline since 1920 in the export trade. Although total exports are small, only about 7,000,000 pairs in 1923 compared with a production of over 350,000,000 pairs in the same year, the decline influences conditions because growth in export trade was naturally expected.

According to old-fashioned ideas, when an industry is over-developed manufacturers reduce production in all plants. This is unsound. Growth in any industry occurs in two ways: (1) through cost reduction, giving the consumer an opportunity to buy a larger quantity of an article for the same annual expenditure, and (2) through the development of new

markets. In the development of attractive products, the shoe manufacturer has excelled, in fact has undoubtedly gone too far for his own good. He must now turn, not to the elimination of stylish types of shoes, but to a new and scientific approach to the solution of the problems involved in producing and distributing stylish types of shoes.

To attain the low cost necessary to sell in volume, whether in staple or fancy styles, not only must labor and management co-operate to turn out shoes at lowest practical unit cost, but the shoe factory must be kept running on full time. Restricted production, on the other hand, by increasing overhead per pair of shoes, increases manufacturing costs and selling prices and reduces sales.

What then is the remedy for over-development? It is drastic. It is hard on the inefficient producer. It is, however, the only rational procedure. This is for the factory that can sell, to sell to the limit; to put out attractive merchandise; to reduce its costs to a minimum; to reward its workers by high wages by maintaining continuous high production at low cost.

STATUS OF THE SHOE INDUSTRY IN NEW ENGLAND

Shoe manufacturing as an industry originated in New England, and notwithstanding its growth in other sections, New England, with 7 % of the population of the United States in 1925, makes over 35 % of the shoes produced. Different localities within New England specialize in different grades and kinds of shoes. Practically everything in footwear, except babies' shoes, had its origin here, and is still produced in styles and values unexcelled in the newer manufacturing centers.

Statistics prove that during the ten years period 1913-1923, the volume of New England manufacture did not increase comparably with other sections. During the next three years, production was less than at any other time in twenty years.

One reason, accounting for this to some extent, is the tendency, as a locality changes in character from agricultural to industrial for it to manufacture more and more of the articles consumed in the neighborhood. The volume of manufactures tends to follow the drifting center of population. This natural and inevitable condition must serve as an incentive toward more intelligent action in developing trade and reducing manufacturing costs in this section.

We find that certain manufacturers in New England, representing different grades of shoes and in different localities, have a thoroughly established, successful business. We find that these houses have developed sales policies adapted specifically to the special types of shoes

manufactured by them, and that they have organized efficient manufacturing systems. In concerns approaching this ideal, production is controlled, losses on material are reduced to a minimum, plans of operation are perfected to avoid the idle time of operatives and machines, contact between employees and management is such as to secure well-balanced piece prices. In such factories an intelligent effort toward standardization of styles is made, not with the purpose of eliminating the style factor, but rather to utilize it in a common-sense manner, reducing the number of styles to a reasonable maximun, and reducing, as far as possible, the varieties of material handled in the factory.

In other words, while we find certain concerns, whose methods are not modern and efficient, gradually losing ground and weakening the standing and the prestige of New England, other New England concerns with thoroughly up-to-date methods of production and merchandising are prosperous, and represent the highest type of shoe production anywhere in the country.

REASONS FOR NEW ENGLAND'S SUPREMACY

1. Original Center of the Industry: Shoes have been manufactured in quantity in this section for at least a hundred years. Until about the period of the Civil War there was no other factory supply; shoes required for all sections of the country were produced in New England. The modern system of shoe making, as distinct from the old handcraft, originated here. The machinery and factory systems now in use the world over were created and developed here. New England has the largest body of skilled, highly trained shoe operatives in the world. It has a multitude of factories, both large and small, easily adapted to all conditions. Boston is the greatest leather market in the world. Materials of all kinds are immediately at hand.

2. Location of Subsidiary Industries: As always happens when an industry has been long and firmly established in any locality, subsidiary industries and feeders grow up about it. This is pre-eminently true in New England. Everything required in the industry is produced here--lasts, patterns, counters, box toes, linings, trimmings, laces, eyelets, shoe nails and tacks, and the multitude of other necessary fittings and findings can be had from our factories at first hand.

3. Location for Export Trade: New England exports more shoes for civilian use than any other section of the country, and is in the most favorable position to handle this trade. New England manufacturers are in the best possible position to give such business quick service and more careful specialization, and can in that way appeal to

the foreign purchaser.

4. Style: New England manufacturers are the acknowledged authorities with regard to style, and this has been heretofore a highly important factor in the production of footwear.

Originality in style and high grade of workmanship give to New England-made shoes an eye appeal which has a distinct selling value. In the past, they have brought much business to this section in spite of a lower labor cost in competing goods, and have given New England goods the preference with the larger and more discriminating dealers.

During the war, and for some years thereafter, owing to rapidly changing market conditions, old price levels entirely disappeared and shoes were made and sold at all kinds of prices. Furthermore, as one of the means to minimize the decline from high wartime production and to satisfy the desires of consumers, great multiplicity and complication of styles of shoes. Today the progressive manufacturer is meeting this latter condition by the application of the common-sense method to the selection and adoption of new styles. On the other hand, with the return to more settled conditions and fixed price levels, the manufacturer who is to retain his business must be able to lower the present high production cost.

If shoes can not be produced to sell at the fixed market prices, orders are lost, business is slack and unemployment is the order of the day. In some of the larger shoe centers in New England, unless unit manufacturing costs are lowered, manufacturers are faced with the alternatives

of cheapening their product by the use of lower cost material, or seeing their business transferred to other sections. The goods made from inferior material will ultimately disappoint the wearer, and reduce the volume of future business.

CONDITIONS WORKING AGAINST NEW ENGLAND

Notwithstanding their evident advantages, New England shoe-makers have serious obstacles that must be overcome. Marketing conditions must be squarely met and selling policies adopted that will counteract competition from other sections. The situation in the principal shoe manufacturing centers of New England is changing so rapidly that neither management nor unions have been able properly to cope with it. Organized labor is only just beginning to appreciate the necessity for producing at low cost in order to compete in sales. Heretofore there has been in many quarters a tendency on the part of the unions to restrict production either directly or indirectly.

Owing to the rapidly changing conditions in the marketing of goods, many New England manufacturers are handicapped in disposing of their product. It should be kept in mind that New England was originally the manufacturing center while the western and southern cities were the distributing centers. The development of the country and the progress of the industry have led many western and southern distributors to supply their needs from their own factories, while New England manufacturers, having lost this original outlet, have been obliged to find new markets for their goods. It has been easier for the aggressive western distributor to establish his factory and supply his own needs than it has been for the eastern manufacturer to develop new markets, and the merchandising of the goods in New England has not, in all cases, been developed along the best lines.

1. Absence of Local Co-operation: A handicap in New England for which the public at large is responsible is the lack of appreciation in most shoe centers (and this applies as well to other manufacturing towns) of the importance to the community of the prosperity of its industries. The importance of such appreciation and its real practical value are realized by manufacturers owning plants in the Middle West and in the West, where more real co-operation is often experienced.

Heavy taxation is frequently a handicap in the East, while elsewhere exemptions from taxation are sometimes offered and, on account either of differences in substantive law or in practice, less burdensome taxes are imposed on merchandise.

There are legitimate ways in which a community can recognize the value of its industries and contribute, to its own advantage, toward their prosperity.

2. Transportation. We can transport our products to a large part of the country on as favorable a rate basis as other chief competing manufacturing centers.

3. Selling and Marketing Policies: The New England manufacturer should closely study his possible markets.

"The distribution of the consumer market by population size-group is significant. It has been found, in 1925, that 31 % of the families live in 144 cities having over 50,000 population; 12 % of the families live in 602 cities of 10,000 to 50,000 population; 9 % of the families live in 2,042 cities and towns of 2,500 to 10,000 population; 9 % of the families live in the very small unincorporated towns under 2,500 population, of which there are 12,905; 39 % of the families

live in the country."

"While many commodities sell in volume to all size-groups, for most commodities the methods of appraising and developing these fields usually require individual study."

In analyzing the market situation the country might be divided into large trading centers, medium trading centers, and small trading centers. The small centers would be towns of a population under 5,000, medium size centers from 5,000 to 50,000 and the large centers from 50,000 up. Western and Southern wholesalers located in zones having a scattered population have built up their business largely in the medium size and smaller trading centers. The volume of retail trade of a single merchant in these smaller centers is not large enough to justify in most cases purchasing from specialty factories or dealers. Many manufacturers in the West and South, by making a diversified line have adjusted their business and methods to meet the requirements of these smaller and general store merchants who are not so exacting from the standpoint of eye and style appeal as are the merchants in the larger trading centers. The selling operations of the manufacturer and the wholesaler have been adapted to this policy and planned with the aid of special salesmen to cater to this trade. It represents today a very large volume, though possibly the automobile is an influence tending toward its reduction and to concentrate retail purchases more and more in the larger trading centers.

In the larger trading centers, shoes, in many instances, are sold in shops handling nothing else. The volume of sales

in these exclusive shops and chain stores is sufficiently large to justify purchasing from a specialty manufacturer. To secure the best in each particular grade, it is necessary to purchase from the manufacturers who have specialized on that particular product. The distributor who makes and handles a general line of merchandise--although perhaps excelling in money value--cannot utilize, because of the great variety in shoe design, the distinctive features that the specialty manufacturer can supply.

New England is made up largely of a group of manufacturers making certain distinct or special grades of shoes. Their product fits in with the requirements of the merchants located in the larger trading centers throughout the country, of the non-manufacturing general line and specialty wholesaler, of the chain store and mail-order houses. Our weak point is in getting our product to the medium and small trading centers at a reasonable and competitive cost. A plan worthy of consideration is for a group of Eastern manufacturers making different grades and not competing one with the other to combine their products in one selling agency catering to the smaller trade. In this way they may meet the competition of the manufacturers located in other sections making a general line of merchandise and who are strongly intrenched in the small and medium trading centers.

Information from various New England shoe manufacturers has illustrated the very large variation in the cost of selling similar kinds of shoes. For example, we find sales manager expense running from practically nothing up to 2 ¢ per pair; sales office expense from practically nothing up to

17 ¢ per pair; advertising from nothing to 23 ¢ per pair; salesmen up to 35 ¢ per pair; and so on. Expressed in percentages of factory sale price, costs run from nearly zero up to 13 %. In referring to such figures as these it is evident of course, that different conditions, different lines of shoes, and different selling policies govern the selling cost. At the same time the variation in the figures of different manufacturers operating under similar conditions is so large as to emphasize the practicability of more scientific marketing.

A procedure adopted with marked benefit by individual manufacturers in many industries is the analysis of market conditions as applied to their own current products and possible side lines. A comprehensive commercial analysis involves studies of distribution policies, comparison of territories, examination of profitable lines, relation of sales to production, proper sequence of manufacture, cost of selling under various conditions, comparison of effort of different salesmen, marketing of the particular product with a view to increasing volume of sales, pushing most profitable lines, and reducing selling costs.

4. Labor Cost: The largest item in the cost of a shoe is material, but the variation in costs of similar materials in different parts of the country is so slight that it can be neglected as a variable factor.

Next to material the largest factor in the cost of shoes is labor, figuring approximately 25 % of total cost. It is also the factor showing the widest variation and with respect to which New England as a whole seems to be most

handicapped in competition with other sections.

Labor costs in the principal shoe centers of New England, in 1925, we find were higher for a similar grade than in other competitive sections. Considering for the moment other items of cost as being about equal, this means that the New England product was, at that time, handicapped in competing with the rest of the country by higher unit labor costs.

The differential in labor cost between New England and the rest of the country, weighted for the value of the product, shows that, while in 1899 New England labor cost, adjusted for the grade of shoe, was 1.5 % higher than the rest of the country, this figure had risen in 1921 to 12.3 %. The New England manufacturer must sell his product at an appreciably higher price or reduce his manufacturing and sales cost through keener management.

In the following table is given the average labor cost per pair by states from 1899 to 1921.

AVERAGE LABOR COST PER PAIR

	1899	1904	1909	1914	1919	1921
Massachusetts	.270	.309	.355	.406	.674	.891
New Hampshire	.235	.198	.251	.271	.492	.586
Maine	.247	.283	.340	.315	.481	.568
New York	.315	.318	.357	.391	.632	.706
New Jersey	.251	.280	.303	.316	.574	.577
Pennsylvania	.349	.242	.238	.276	.464	.567
Ohio	.288	.287	.345	.390	.703	.861
Illinois	.323	.304	.360	.384	.555	.631
Missouri	.249	.264	.396	.293	.523	.531
Wisconsin	.233	.283	.292	.321	.595	.654
United States	.268	.285	.334	.361	.636	.715

Investigation based on Federal statistics shows that the cost of labor in shoe making in New England, allowing for difference in grades of shoes, is 18 ¢ higher than in the rest of the country.

This 18 ¢ excess labor cost amounts to about 4 ½ % of the cost of the shoe. It is one of the factors that seriously handicap the manufacturer in meeting the competition from other sections of the country.

The cost of living is a factor to be considered in any study of labor cost, but the cost of living does not account for higher labor costs in New England.

Earnings of shoe workers should be relatively high because of the skill required and, in many of the departments, the strenuous nature of the work. High earnings, however, are by no means necessarily co-incident with high unit labor costs, in fact the opposite is often true. That low labor costs are consistent with high yearly earnings of the operator is shown by comparison of records in different shops in different shoe centers.

The high labor costs in New England do not mean correspondingly high yearly earnings for the worker. To be sure, the New England wage earner in the shoe industry earns more per year than workers in states outside of New England. However, examining the returns for the past 25 years, it is seen that whereas, the labor cost has been increasing, the yearly earnings have been relatively less, dropping from 28 % higher than the rest of the country in 1899 to 4.3 % in 1921. In other words, while the unit production labor cost has mounted the earnings per year have not kept pace.

Consideration of the hourly earnings of the workers shows the average earnings of all male workers to be 60.2 ¢ an hour in New England and 57.7 ¢ an hour outside of New England, and for female workers the figures are 42.3 ¢ and 37.7 ¢ respectively. The average combined hourly earnings are 54.1 ¢ in New England and 50.5 ¢ elsewhere. These figures are for the spring of 1922 and show the hourly earnings in New England to be 7.1 % higher at that time than in the states outside of New England.

With the average hourly earnings 7.1 % higher in New England and the average yearly earnings only 4.3 % higher, it might be assumed that the difference was due to shorter allowable working hours in New England. The comparatively slight difference in this respect in different sections of the country is shown in the following table giving the average full time working hours of the shoe factories in the ten leading states for 1922:

	Average Full Time Hours
Massachusetts	47.8
New Hampshire	48.5
Maine	53.1
New York	47.9
New Jersey	45.5
Pennsylvania	50.5
Ohio	50.0
Illinois	49.9
Missouri	49.0
Wisconsin	48.6

After a study of the Boot and Shoe Industry, one cannot honestly be pessimistic.

New England cannot, however, rest upon faded laurels. It must always remember that the shoe industry in the United States is highly competitive, that success will come only to the efficient, and that the inefficient will be eliminated.

If the manufacturer will study his market, his selling costs and methods, and his operating efficiency, and if the employee will assist in a broad and mutually helpful consideration of wage and factory problems, New England has little to fear. There is nothing in its geographical location that should impose any considerable handicap.

Such obstacles to success as exist to any material degree are found in the attitude of the public, the manufacturers and the workers, and can be surmounted here as elsewhere.

CHAPTER XIV.

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